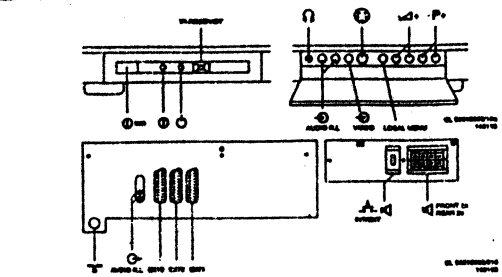
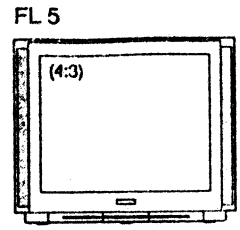
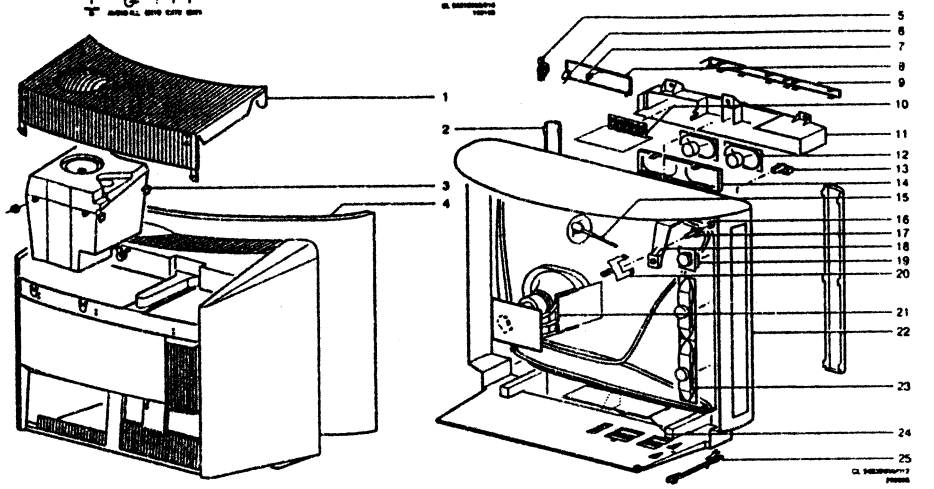
SERV. 3278

PHILIPS







25PT9011/01
25PT9031/12
29PT9111/01
29PT9111/58
29PT9131/12
29PT9131/19

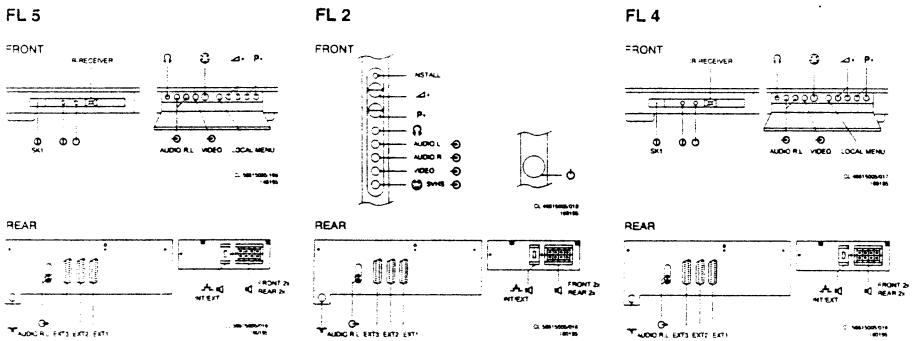
1	4822 458 20215	Grill for woofer
2	4822 458 50552	Grill right 25"
2	4822 458 50554	Grill right 29"
2	4822 458 50553	Grill left 25"
2	4822 458 50555	Grill left 29"
3	4822 445 10467	LS box subwoofer
4	4822 438 40311	Backcover 25"
4	4822 438 40312	Backcover 29"
5	4822 529 10316	Damper
6	4822 492 42761	Spring for door
7	4822 417 50289	Locking mechanism
8	4822 432 93344	Door
9	Not present	
10	4822 459 61229	Knob frame
11	4822 404 31518	Control unit
12	4822 240 20338	Centre speaker
13	4822 410 63684	Mains knob
14	4822 466 93513	Plate for centre speaker
15	4822 320 20234	EHT cable 25"
15	4822 320 20233	EHT cable 29"
16	4822 404 31294	Insert VP19100 29"
17	4822 505 11195	Screw 25"
17	4822 502 21359	Screw 29"
18	4822 404 31453	Service bracket
19	4822 240 30742	Loudspeaker tweeter
20	4822 404 31454	Bracket fix. deg. coil 25"
20	4822 403 70906	Bracket fix. deg. coil 29"
21	4822 404 31444	Bracket for SCAVEM
22	4822 430 51002	Cabinet 25"
22	4822 430 51003	Cabinet 29"
23	4822 240 30743	Squeeter
24	4822 466 62337	Protection plate
25	4822 404 31288	Relief for mains-cord
	4822 459 11127	Word mark "Philips"
	4822 459 11033	Word mark "Matchline"
	4822 404 31291	Mains cord holder on rear cover
	4822 321 11108	Mains cord
	4822 320 20216	Vg2 cable
	4822 218 21313	Remote control RC8101
	4822 218 21312	Remote control RC8102
	4822 157 71539	Degaussing coil 25"
	4822 157 71529	Degaussing coil 29"
	4822 131 20653	Picture tube A59ESF002X43
	4822 131 20585	Picture tube A68ESF002X43
	4822 445 10426	Surround sound speaker

MODEL	RC	SYSTEM	SOUND	WATT	SIZE	VOLT RANGE	TUNER
		PAL = P SECAM = S NTSC = N			(cm) WxHxD		
25PT9011/01	8102	P-BG,S-BGL,N-M	2CS Dolby	60W	65x51x49	220V	FQ916ME/PH MK2
25PT9031/12	8102	P-BG,S-BGL,N-M	NICAM BGLI Dolby	60W	65x51x49	220V	FQ916ME/PH MK2
29PT9111/01	8101	P-BG,S-BGL,N-M	2CS Dolby	60W	71x57x51	220V	FQ916ME/PH MK2
29PT9111/58	8101	P-BG,S-BGDK,N-M	2CS stereo	60W	71x57x51	220V	FQ916DMR/PH MK2
29PT9131/12	8101	P-BG,S-BGL,N-M	NICAM BGLI Dolby	60W	71x57x51	220V	FQ916ME/PH MK2
29PT9131/19	8101	P-BGI,S-BGLL'	NICAM BGLI Dolby	60W	71x57x51	220V	FQ916MF/PH MK2

1. Technical data

Mains voltage	: 220 - 240 V (± 10%)
	: 50 Hz - 60 Hz (± 5%)
Aerial input impedance	: 75 Ω - koaxial
Minimum aerial voltage	: 30 µV (VHF), 40 µV (UHF)
Maximum aerial voltage VHF/S/UHF	: 180 mV
Programmes	: 0 - 99
VCR programmes	: 0, 50 - 99

2. Connection facilities and Chassis overview



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Specification of the connectors

EXT 1 (AUX): RGB+CVBS+Y/C

1 -Audio R (0,5VRMS ≤ 1kΩ)
2 -Audio R (0,2-2VRMS ≥ 10kΩ)
3 -Audio L (0,5VRMS ≤ 1kΩ)
4 -Audio ⊥
5 -Blue ⊥
6 -Audio L (0,2-2VRMS ≥ 10kΩ)
7 -Blue (0,7Vpp/75Ω)
8 -CVBS-status 0-2V: INT
4,5-7V: EXT 16:9
9,5-12V: EXT 4:3
9 -Green ⊥
10 --
11 -Green (0,7Vpp/75Ω)
12 --
13 -Red ⊥
14 -RGB-status ⊥
15 -Red (0,7Vpp/75Ω)
16 -RGB-status (0-0,4V: INT)
(1-3V: EXT/75Ω)
17 -CVBS ⊥
18 -CVBS ⊥
19 -CVBS (1Vpp/75Ω)
20 -CVBS (1Vpp/75Ω)
21 -Earthscreen

EXT2 (VCR): Y/C+CVBS+RGB

1 -Audio R (0,5VRMS ≤ 1kΩ)
2 -Audio R (0,2-2VRMS ≥ 10kΩ)
3 -Audio L (0,5VRMS ≤ 1kΩ)
4 -Audio ⊥
5 -Blue ⊥
6 -Audio L (0,2-2VRMS ≥ 10kΩ)
7 -Blue (0,7Vpp/75Ω)
8 -CVBS-status 0-2V: int
4,5-7V: EXT 16:9
9,5-12V: EXT 4:3
9 -Green ⊥
10 --
11 -Green (0,7Vpp/75Ω)
12 --
13 -Red ⊥
14 -RGB-status ⊥
15 -Red (0,7Vpp/75Ω)
16 -RGB-status (0-0,4V: INT)
(1-3V: EXT/75Ω)
17 -CVBS ⊥
18 -CVBS ⊥
19 -CVBS (1Vpp/75Ω)
20 -CVBS/Y (1Vpp/75Ω)
21 -Earthscreen

EXT3: CVBS+RGB

1 --
2 -Audio R (0,2-2VRMS ≥ 10kΩ)
3 --
4 -Audio ⊥
5 -Blue ⊥ (Euro only)
6 -Audio L (0,2-2VRMS ≥ 10kΩ)
7 -Blue (0,7Vpp/75Ω)
8 --
9 -Green
10 --
11 -Green (0,7Vpp/75Ω)
12 --
13 -Red ⊥
14 -RGB-status ⊥
15 -Red (0,7Vpp/75Ω)
16 --
17 -CVBS ⊥
18 -CVBS ⊥
19 --
20 -CVBS (1Vpp/75Ω)
21 -Earthscreen

EXT3 (front)

CINCH Video 300mVpp/75Ω
CINCH Audio L (0,5VRMS; ≥ 10kΩ)
CINCH Audio R (0,5VRMS; ≥ 10kΩ)

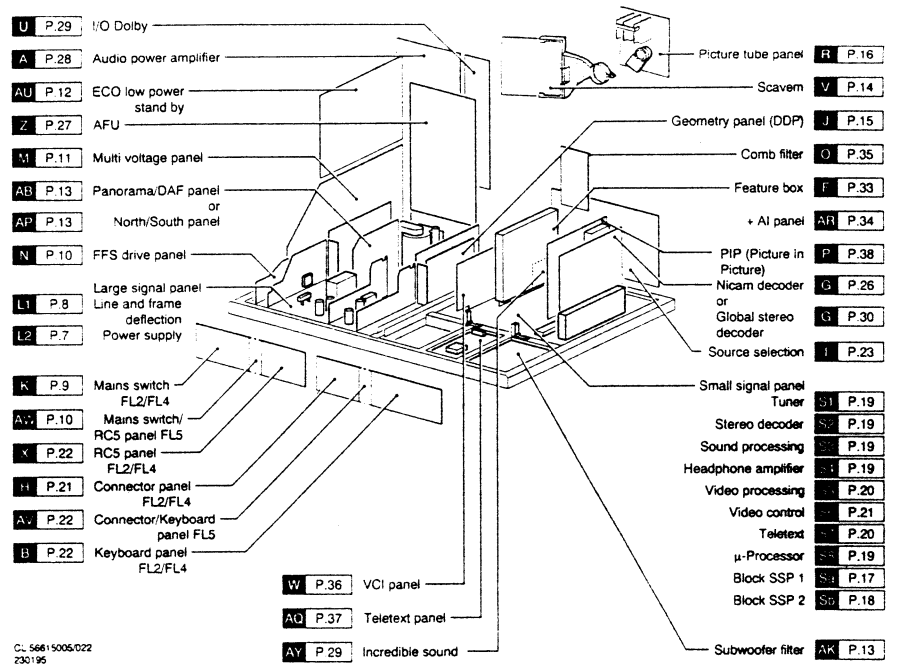
SVHS
1 - ⊥
2 - ⊥
3 - Y (1Vpp; 75Ω)
4 - C (0,3Vpp; 75Ω)

32-2000Ω ≥ 10mW

Audio out (rear)

CINCH Audio L (0,5VRMS; ≤ 1kΩ)
CINCH Audio R (0,5VRMS; ≤ 1kΩ)

Chassis overview


U P.29 I/O Dolby
A P.28 Audio power amplifier
AU P.12 ECO low power stand by
Z P.27 AFU
M P.11 Multi voltage panel
AB P.13 Panorama/DAF panel or
AP P.13 North/South panel
N P.10 FFS drive panel
L1 P.8 Large signal panel Line and frame deflection
L2 P.7 Power supply
K P.9 Mains switch FL2/FL4
AA P.10 Mains switch/ RC5 panel FL5
X P.22 RC5 panel FL2/FL4
H P.21 Connector panel FL2/FL4
AA P.22 Connector/Keyboard panel FL5
B P.22 Keyboard panel FL2/FL4
W P.36 VCI panel
AQ P.37 Teletext panel
AY P.29 Incredible sound
R P.16 Picture tube panel
V P.14 Scavem
J P.15 Geometry panel (DDP)
O P.35 Comb filter
F P.33 Feature box
AR P.34 + AI panel
P P.38 PIP (Picture in Picture)
G P.26 Nicam decoder or
G P.30 Global stereo decoder
I P.23 Source selection
Small signal panel
S1 P.19 Tuner
S2 P.19 Stereo decoder
S3 P.19 Sound processing
S4 P.19 Headphone amplifier
S5 P.20 Video processing
S6 P.21 Video control
S7 P.20 Teletext
S8 P.19 µ-Processor
S9 P.17 Block SSP 1
S10 P.18 Block SSP 2
AK P.13 Subwoofer filter

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3. Safety instructions, maintenance instruction, Warnings and Notes

Safety instructions for repairs

1. Safety regulations require that during a repair:
   - the set should be connected to the mains via an isolating transformer
   - safety components, indicated by the symbol ▲, should be replaced by components identical to the original ones
   - when replacing the CRT, safety goggles must be worn

2. Safety regulations require that after a repair the set must be returned in its original condition. In particular attention should be paid to the following points:
   - As a strict precaution, we advise you to resolder the solder joints through which the horizontal deflection current is flowing, in particular:
     - all pins of the line output transformer (LOT);
     - fly-back capacitor(s);
     - S-correction capacitor(s);
     - line output transistor;
     - pins of the connector with wires to the deflection coil;
     - other components through which the deflection current flows.

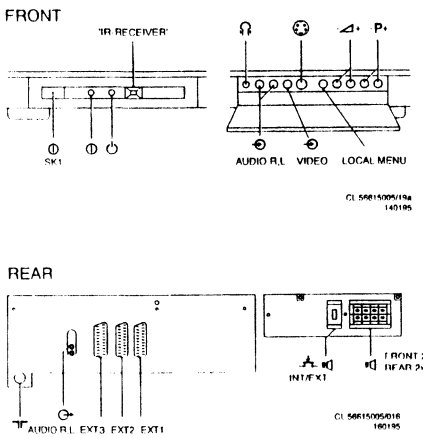
Note:
This resoldering is advised to prevent bad connections due to metal fatigue in solder joints and is therefore only necessary for television sets older than 2 years.
- The wire trees and EHT cable should be routed correctly and fixed with the mounted cable clamps.
- The insulation of the mains lead should be checked for external damage.
- The mains lead strain relief should be checked for its function in order to avoid touching the CRT, hot components or heat sinks.
- The electrical DC resistance between the mains plug and the secondary side should be checked (only for sets which have a mains isolated power supply).
  This check can be done as follows:
  - unplug the mains cord and connect a wire between the two pins of the mains plug;
  - set the mains switch to the on position (keep the mains cord unplugged !);
  - measure the resistance value between the pins of the mains plug and the metal shielding of the tuner or the aerial connection on the set. The reading should be between 4.5 MΩ and 12 MΩ
  - switch off the TV and remove the wire between the two pins of the mains plug.
- The cabinet should be checked for defects to avoid touching of any inner parts by the customer.

1. Technische daten

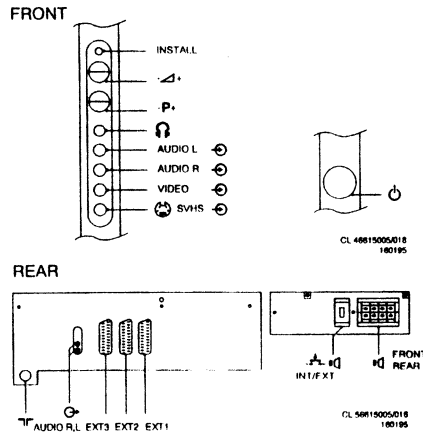
Netzspannung und -frequenz	: 220 - 240 V (± 10%)
	: 50 Hz - 60 Hz (± 5%)
Antennen-Eingangsimpedanz	: 75 Ω - koaxial
Mindest-Antennenspannung	: 30 µV (VHF), 40 µV (UHF)
Max.AntennenspannungVHF/S/UHF	: 180 mV
Programme	: 0 - 99
VCR - Programme	: 0, 50 - 99

2. Anschlußmöglichkeiten und Chassis Übersicht

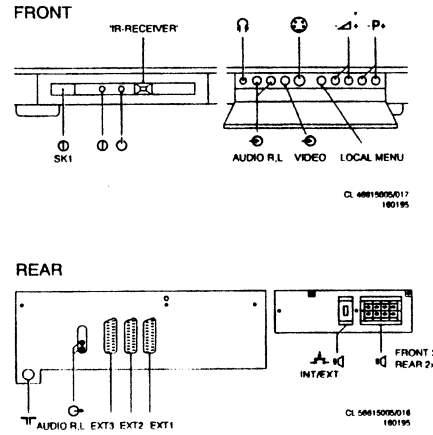
FL 5



FL 2



FL 4



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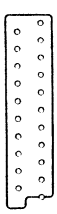
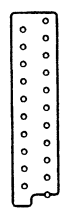
Anschlußmöglichkeiten

EXT1 (AUX): RGB+CVBS+SVHS



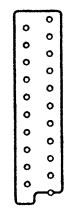
1 -Audio ⊖ R (0,5V$_{RMS}$ ≤ 1kΩ)
2 -Audio ⊕ R (0,2-2V$_{RMS}$ ≥ 10kΩ)
3 -Audio ⊖ L (0,5V$_{RMS}$ ≤ 1kΩ)
4 -Audio ⊥
5 -Blau ⊥
6 -Audio ⊕ L (0,2-2V$_{RMS}$ ≥ 10kΩ)
7 -Blau (0,7V$_{pp}$/75Ω)
8 -FBAS ⊕ 0-2V: INT
Austasung 4,5-7V: EXT 16:9
9,5-12V: EXT 4:3
9 -Grün ⊥
10 --
11 -Grün (0,7V$_{pp}$/75Ω)
12 --
13 -Rot ⊥
14 -RGB-Austastung ⊥
15 -Rot (0,7V$_{pp}$/75Ω)
16 -RGB-Austastung (0-0,4V: INT)
(1-3V: EXT/75Ω)
17 -FBAS ⊥
18 -FBAS ⊥
19 -FBAS ⊖ (1V$_{pp}$/75Ω)
20 -FBAS ⊕ (1V$_{pp}$/75Ω)
21 -Abschirmung

EXT2 (VCR): SVHS+CVBS+RGB



1 -Audio ⊖ R (0,5V$_{RMS}$ ≤ 1kΩ)
2 -Audio ⊕ R (0,2-2V$_{RMS}$ ≥ 10kΩ)
3 -Audio ⊖ L (0,5V$_{RMS}$ ≤ 1kΩ)
4 -Audio ⊥
5 -Blau ⊥
6 -Audio ⊕ L (0,2-2V$_{RMS}$ ≥ 10kΩ)
7 -Blau (0,7V$_{pp}$/75Ω)
8 -FBAS ⊕ 0-2V: INT
Austasung 4,5-7V: EXT 16:9
9,5-12V: EXT 4:3
9 -Grün ⊥
10 --
11 -Grün (0,7V$_{pp}$/75Ω)
12 --
13 -Rot ⊥
14 -RGB-Austastung ⊥
15 -Rot (0,7V$_{pp}$/75Ω)
16 -RGB-Austastung (0-0,4V: INT)
(1-3V: EXT/75Ω)
17 -FBAS ⊥
18 -FBAS ⊥
19 -FBAS ⊖ (1V$_{pp}$/75Ω)
20 -FBAS/Y ⊕ (1V$_{pp}$/75Ω)
21 -Abschirmung

EXT3: CVBS+RGB



1 --
2 -Audio ⊕ R (0,2-2V$_{RMS}$ ≥ 10kΩ)
3 --
4 -Audio ⊥
5 -Blau ⊥ (nür Euro)
6 -Audio ⊕ L (0,2-2V$_{RMS}$ ≥ 10kΩ)
7 -Blau (0,7V$_{pp}$/75Ω)
8 --
9 -Grün ⊕
10 --
11 -Grün (0,7V$_{pp}$/75Ω)
12 --
13 -Rot ⊥
14 -RGB-Austastung ⊥
15 -Rot (0,7V$_{pp}$/75Ω)
16 --
17 -FBAS ⊥
18 -FBAS ⊥
19 --
20 -FBAS/Y ⊕ (1V$_{pp}$/75Ω)
21 -Abschirmung

EXT3 (vorderseite)

⊙ CINCH Video ⊕ 300mV$_{pp}$/75Ω
⊙ CINCH Audio ⊕ L (0,2 - 2V$_{RMS}$; ≥ 10kΩ)
⊙ CINCH Audio ⊕ R (0,2 - 2V$_{RMS}$; ≥ 10kΩ)

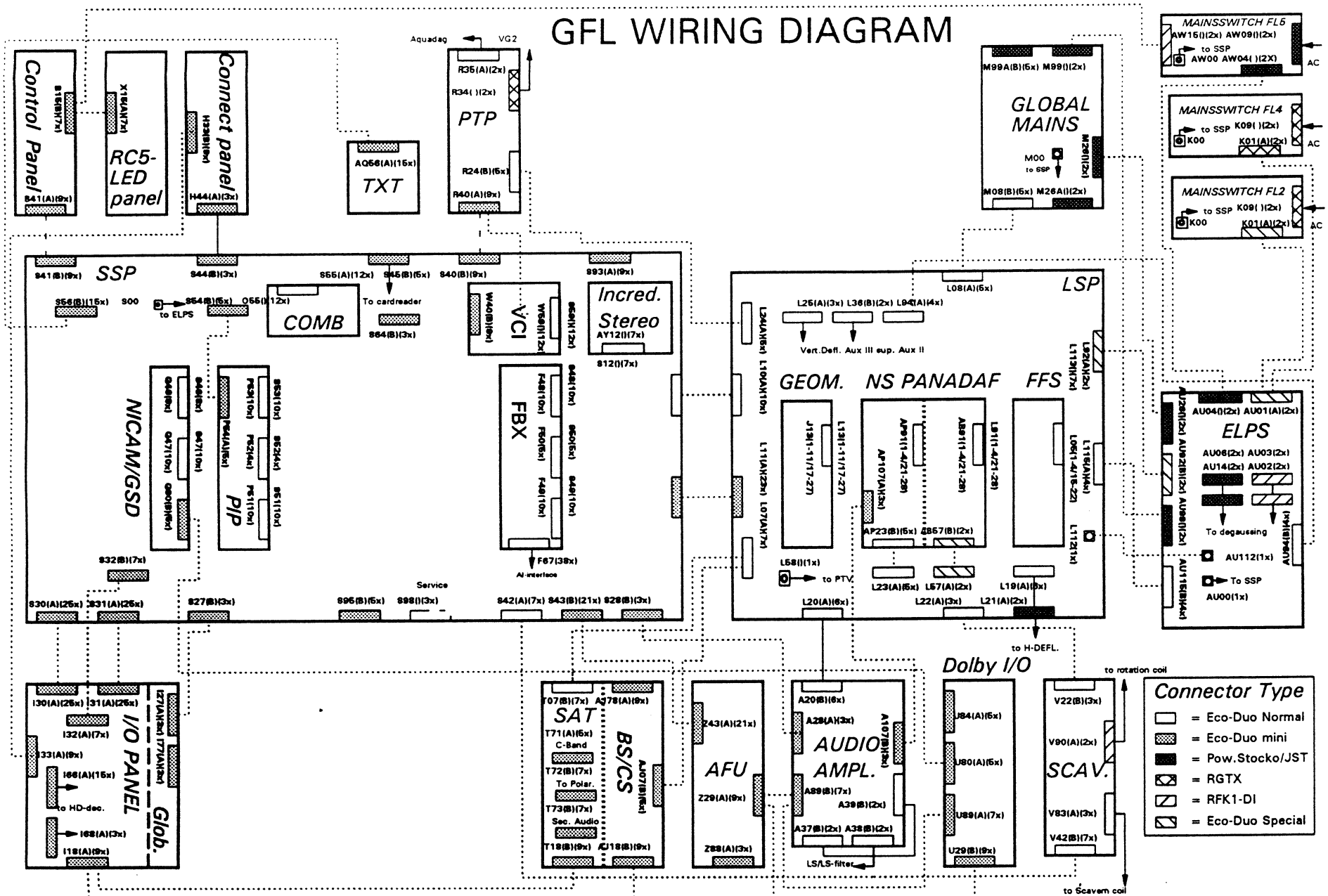
3,5mm 32-2000Ω ≥ 10mW

SVHS

1 - ⊥
2 - ⊥
3 - Y ⊕ (1V$_{pp}$; 75Ω)
4 - C ⊕ (0,3V$_{pp}$; 75Ω)

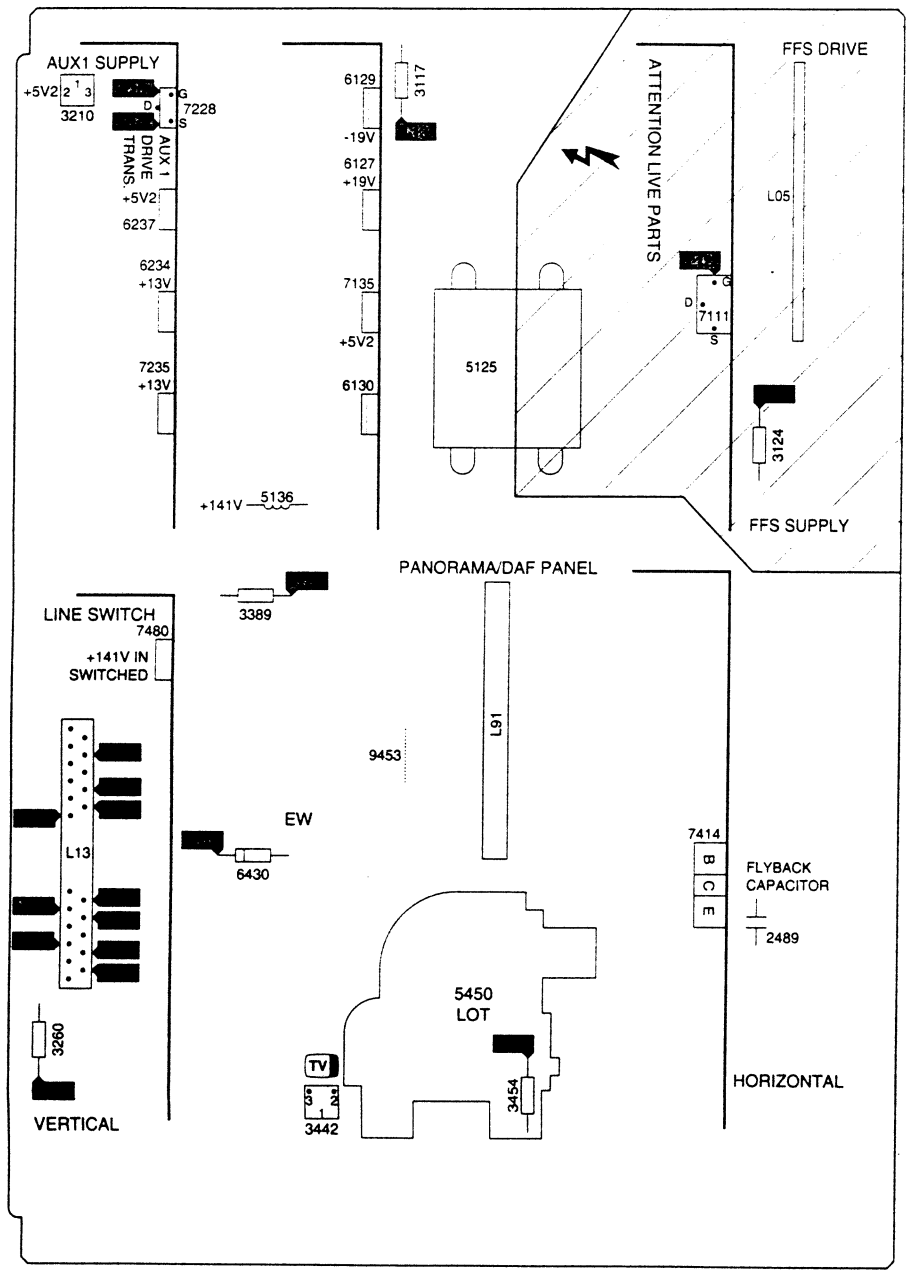
Audio Ausgang (hinterseite)

⊙ CINCH Audio ⊖ L (0,5V$_{RMS}$; ≤ 1kΩ)
⊙ CINCH Audio ⊖ R (0,5V$_{RMS}$; ≤ 1kΩ)



Wiring diagram / Verdratungsschema / Schema de câblage

Large signalpanel / Groß-Signal Platte / Platine forts signeaux



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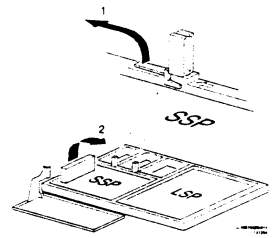


Fig. 5

4.4 Removing the Small Signal Panel (Fig. 5)

To remove the SSP, first turn the I/O bracket down. After that remove all cables from their connectors, followed by the removal of the two red coloured clips by lifting the lip and moving to the left.
Now the SSP can be taken out of the bracket.

4.5 Removing the Large Signal Panel (Fig. 4)

To remove the LSP first the stand-by bracket and the audio bracket have to be turned down. After that the metal line output transformer support bracket has to be shifted by loosing the screw at the right hand side. Now the metal bracket can be shifted to the right until it stops. The chassis lock between the SSP and the LSP becomes free then and can be pulled back en bend away from the LSP. Finally loosen the red clamps at the front side of the LSP and the wires from their connectors. The LSP can then be taken out of the bracket.

4.6 Removing panels located under the picture tube

The fixation of the panels located under the picture tube depends on the cabinet type.

FL2 cabinets (Fig. 6 + 7 + 8)
For FL2 cabinets the knobs are located at the side of the cabinet, the LED's are located under the picture tube. These panels can be taken out by loosen the clicks.

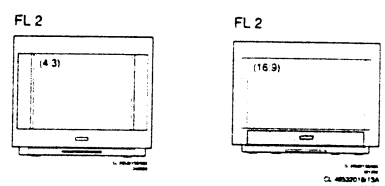


Fig. 6 + Fig. 7

FL4 cabinets (Fig. 9)
In FL4 cabinets both knobs and LED's are located under the picture tube. Before they can be taken out, first their screws have to be removed. Access to the screws can be created by taking the whole chassis away from the bottom plate.

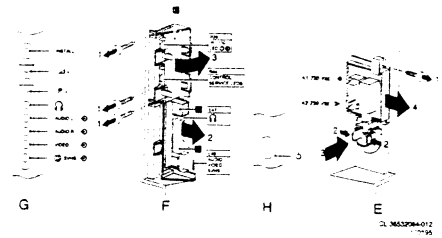


Fig. 8

The centre speakers of FL4 are mounted via the front side of the cabinet. To get access first the grill has to be removed. The centre grill is fixed with clicks and also screws are used. The screws are located at the inner side of the cabinet, under the picture tube. After the screws have been removed, open the door and carefully put a screwdriver between the grill and the cabinet. by turning the screwdriver the right click will loose. To loose the left click, put the whole set at the edge of a table first. Then put the screwdriver at the underside of the set between the grill and the cabinet.

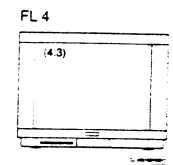


Fig. 9

FL5 cabinets (Fig. 10)
In FL5 cabinets both knobs and LED's are located under the picture tube. All front panels and centre loudspeakers are mounted in a plastic bracket which can be removed as a whole.
To remove the bracket, the screws between the picture tube and the bottom plate have to be removed, but also the screws which are located at the underside of the cabinet.
To remove these screws the set has to be turned. Before turning preferably the backcover of the set is mounted. Turn the set with the picture tube face downwards and put it carefully on a soft and clean surface. After the screws have been removed the set can be put back in the normal position.

After removing the screws at the inner side, the bracket can be taken away from the underside.

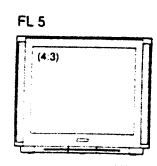


Fig. 10

Maintenance instruction

It is recommended to have a maintenance inspection carried out by a qualified service employee. The interval depends on the usage conditions:

- when the set is used under normal circumstances, for example in a living room, the recommended interval is 3 to 5 years;
- when the set is used in circumstances with higher dust, grease or moisture levels, for example in a kitchen, the recommended interval is 1 year.

The maintenance inspection contains the following actions:

- execute the above mentioned 'general repair instruction';
- clean the power supply and deflection circuitry on the chassis;
- clean the picture tube panel and the neck of the picture tube.

Warnings

- In order to prevent damage to ICs and transistors, all high-voltage flashovers must be avoided. In order to prevent damage to the picture tube, the method shown in Fig. 3.1 should be used to discharge the picture tube. Use a high-voltage probe and a multimeter (position DC-V). Discharge until the meter reading is 0V (after approx. 30s).
- **ESD**

  All ICs and many other semiconductors are sensitive to electrostatic discharges (ESD). Careless handling during repair can drastically shorten the life. Make sure that during repair you are connected by a pulse band with resistance to the same potential as the earth ot the unit. Keep components and tools also at this same potential.
- Together with the deflection unit and any multipole unit, the flat square picture tubes used form an integrated unit. The deflection and the multipole units are set optimally at the factory. Adjustment of this unit during repair is therefore not recommended.
- Be careful when taking measurements in the high-voltage section and on the picture tube.
- Never replace modules or other components while the unit is switched on.
- When making settings, use plastic rather than metal tools. This will prevent any short circuits and the danger of a circuit becoming unstable.
- On this unit the 141 volt supply voltage is not supplied via an interconnection on the deflection yoke to the line output transformer. Whenthe deflection cable is detached, the + 141 volt supply remeins loaded. In orderto unload the + 141 volts, coil 5136 should be removed.

Notes

1. The direct voltages and oscillograms should be measured with regard to the tuner earth (⊥), or hot earth (⊥) as this is called.
2. The direct voltages and oscillograms shown in the diagrams should be measured in the **Service Default Mode** (see chapter 8) with a colour bar signal and stereo sound (L:3 kHz, R:1 kHz unless stated otherwise) and picture carrier at 475.25 MHz.
3. Where necessary, the oscillograms and direct voltages are measured with (⊓⊓) and without aerial signal (⋊). Voltages in the power supply section are measured both for normal operation (⏻) and in standby (⏻). These values are indicated by means of the appropriate symbols.
4. The picture tube PWB has printed spark gaps. Each spark gap is connected between an electrode of the picture tube and the Aquadag coating.
5. The semiconductors indicated in the circuit diagram and in the parts lists are completely interchangeable per position with the semiconductors in the unit, irrespective of the type indication on these semiconductors.

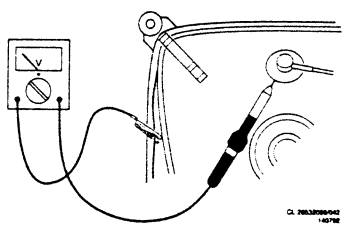


Fig. 3.1

6. DOLBY SURROUND PRO • LOGIC

Manufactured under license from Dolby Laboratories Licensing Corporation.

DOLBY, the double-D symbol ⋊ and PRO LOGIC are trademarks of Dolby Laboratories Licensing Corporation.

4. Mechanical instructions

The GFL chassis has predefined service positions for different panels (Fig. 1 + 2).
To get access to the chassis, do the following steps:

a remove the sub woofer grill;
b disconnect the cable from the subwoofer;
c remove the screws from the back cover and the two chassis cover plates;
d remove the back cover.

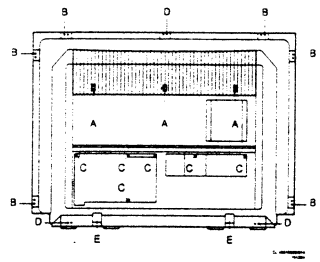


Fig. 1

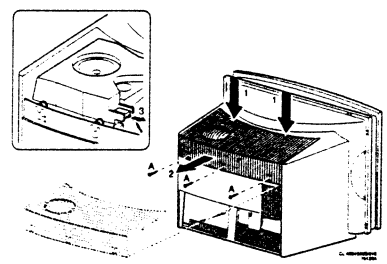


Fig. 2

4.1 The overview position (Fig. 3)

To get a better overview over the chassis, the whole chassis can be put one step backwards by lifting the whole bracket out of the holes and locating it again in the holes next to them. While doing this loosen cables from clips.

4.2 The service position of the Large Signal Panel (LSP) and the Small Signal Panel (SSP) (Fig. 3)

To get access to the solder sides of the SSP and the LSP, do the following steps:

a disconnect the cables from the loudspeakers;
b disconnect the cable from the degaussing coil;
c eventually also the cables to the front inputs and the headphone output can be disconnected (do not disconnect the wires to the local control knobs and the remote control LED's, otherwise communication between the Dealer Service Tool and the chassis is impossible);
d pay attention to the cable routing in order safeguard the original routing;
e loosen the cables from clips at SSP side and from the mains filter bracket;
f loosen the cables from clips above the line output transformer;
g take the mains lead out of the strain relief and remove the whole relief by turning it over 90 degrees before it can be taken out;
h lift the whole chassis bracket while turning it over 90 degrees and put the bracket in the holes of the bottom plate. Fix the bracket to the hook on top of the cabinet.

This service position is designed to perform service at the customers home without the use of a table or workbench.

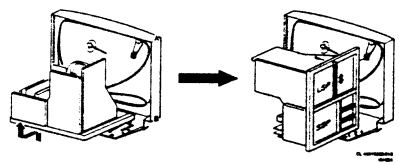


Fig. 3

4.3 The service position of the other panels (Fig. 4)

The three vertical brackets can be turned down when the chassis is in the overview position. The stand-by supply bracket and the audio amplifier bracket can be turned down after removing the screws and the two fixing brackets. Before turning the brackets have to be lifted. The I/O bracket can be turned down the same way. Be careful not to forget the screw and the clip near the front-end.

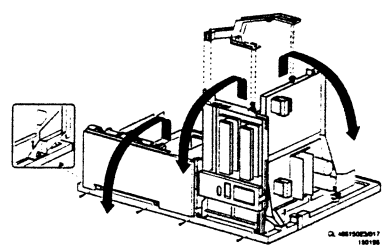
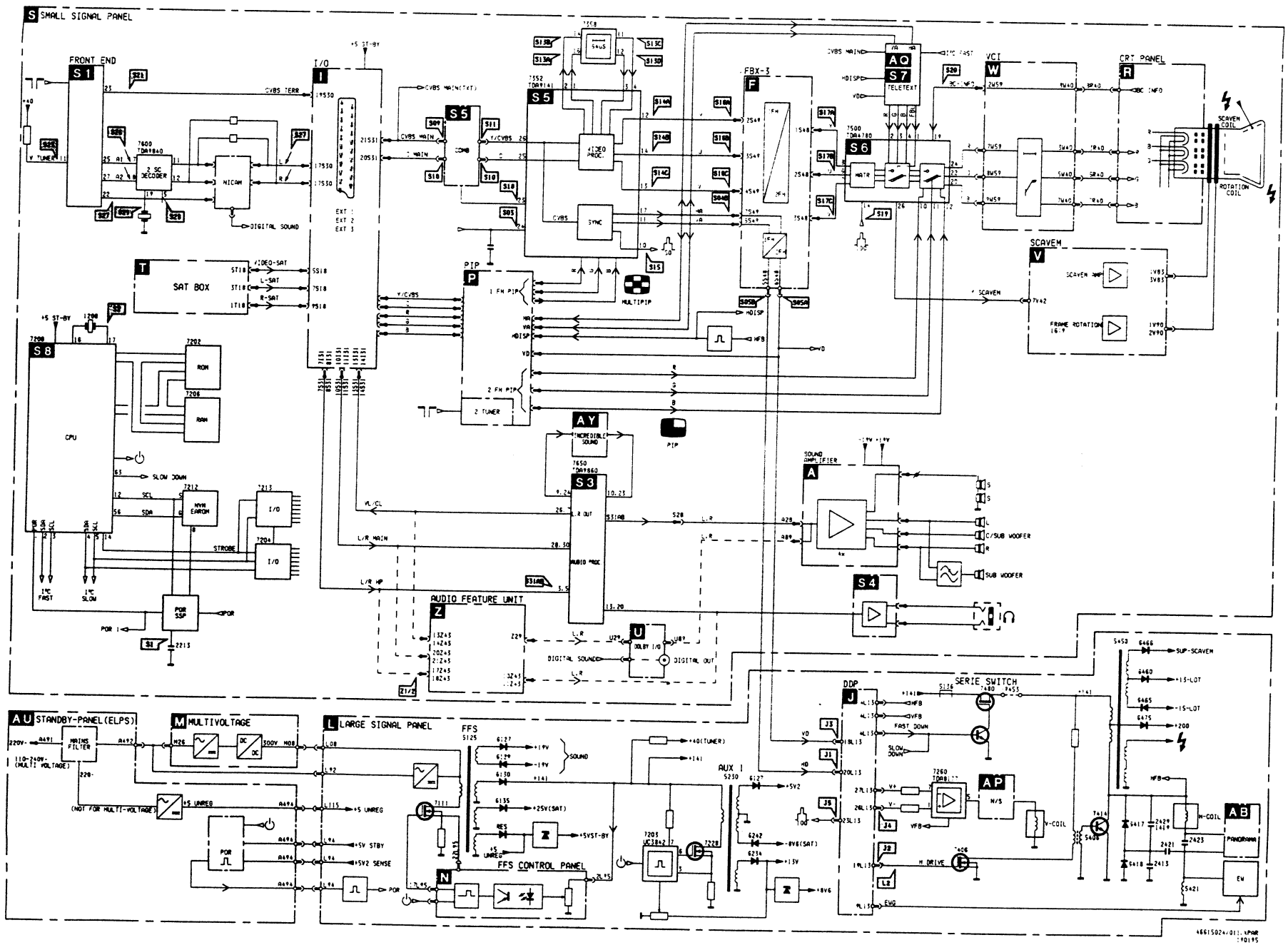


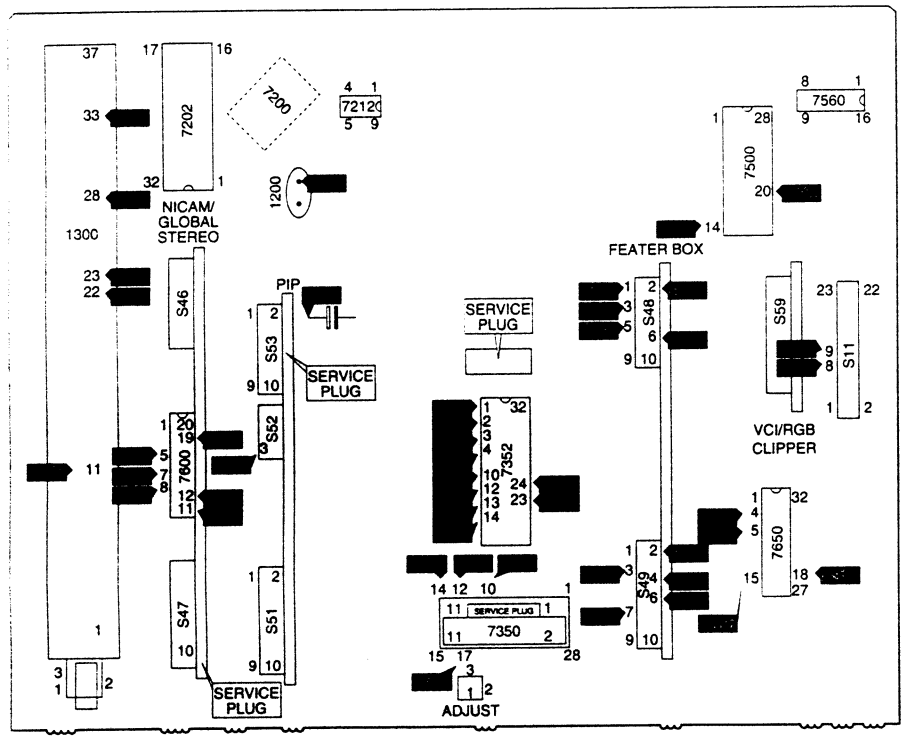
Fig. 4

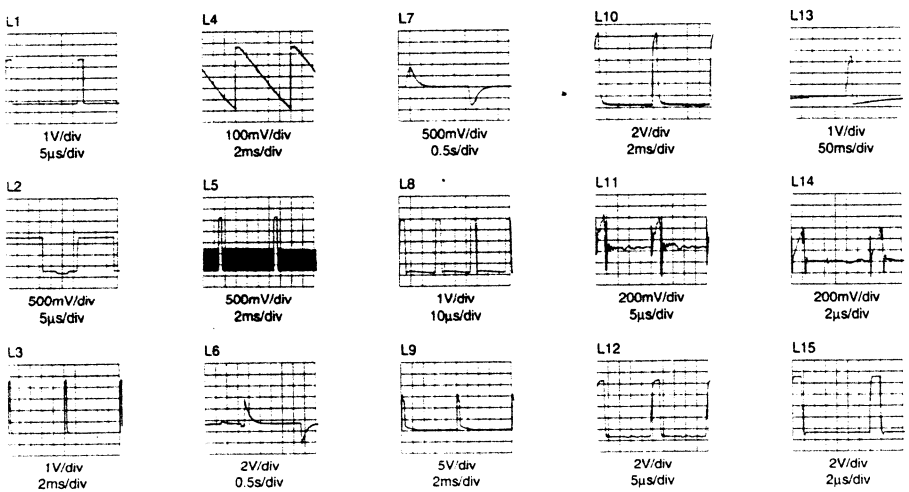
5. Blockdiagram / Blockschaltbild / Schéma bloc

GFL2.20 E 4

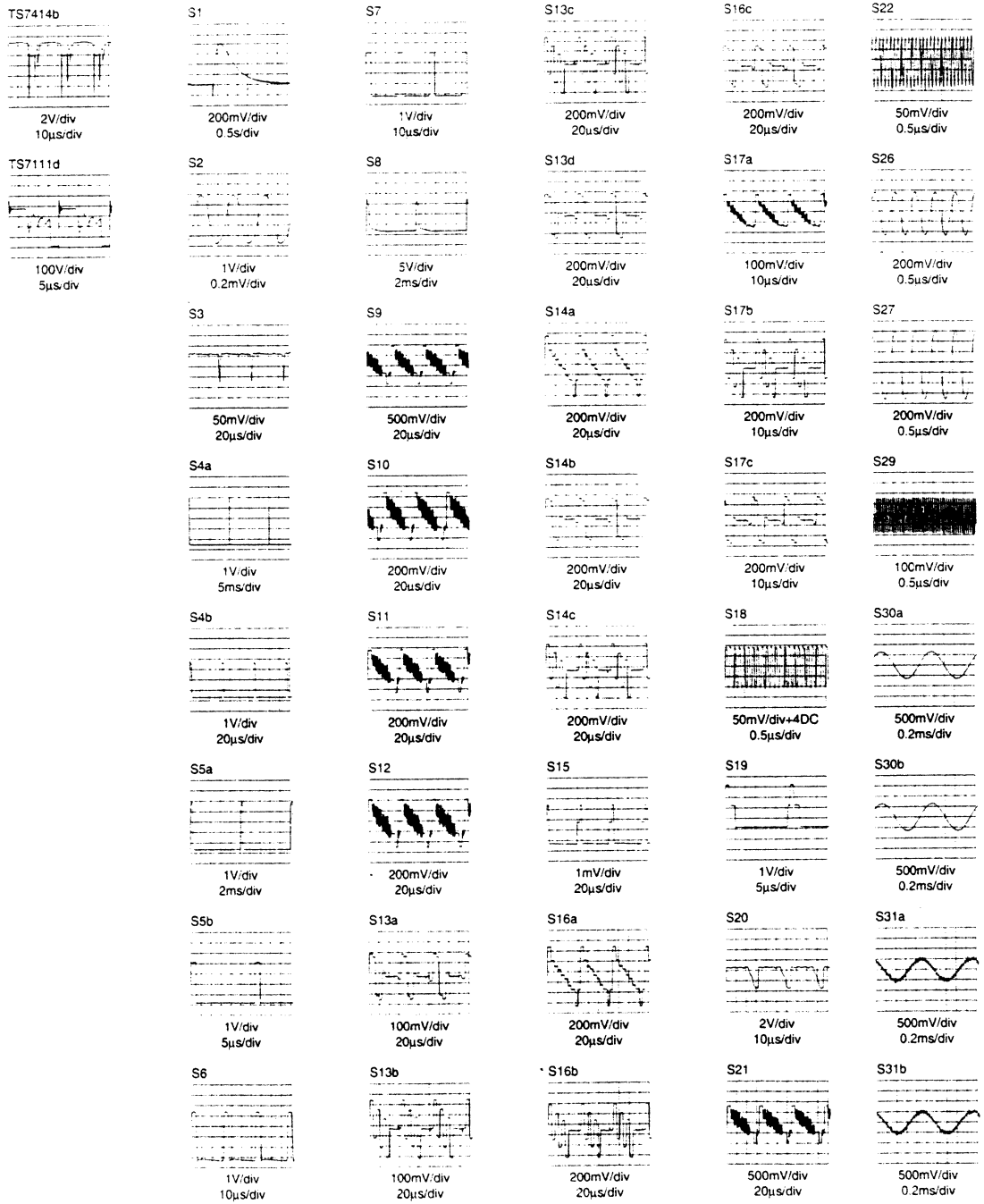


Small signal panel / Klein-signal Platte / Platine à petites signeaux

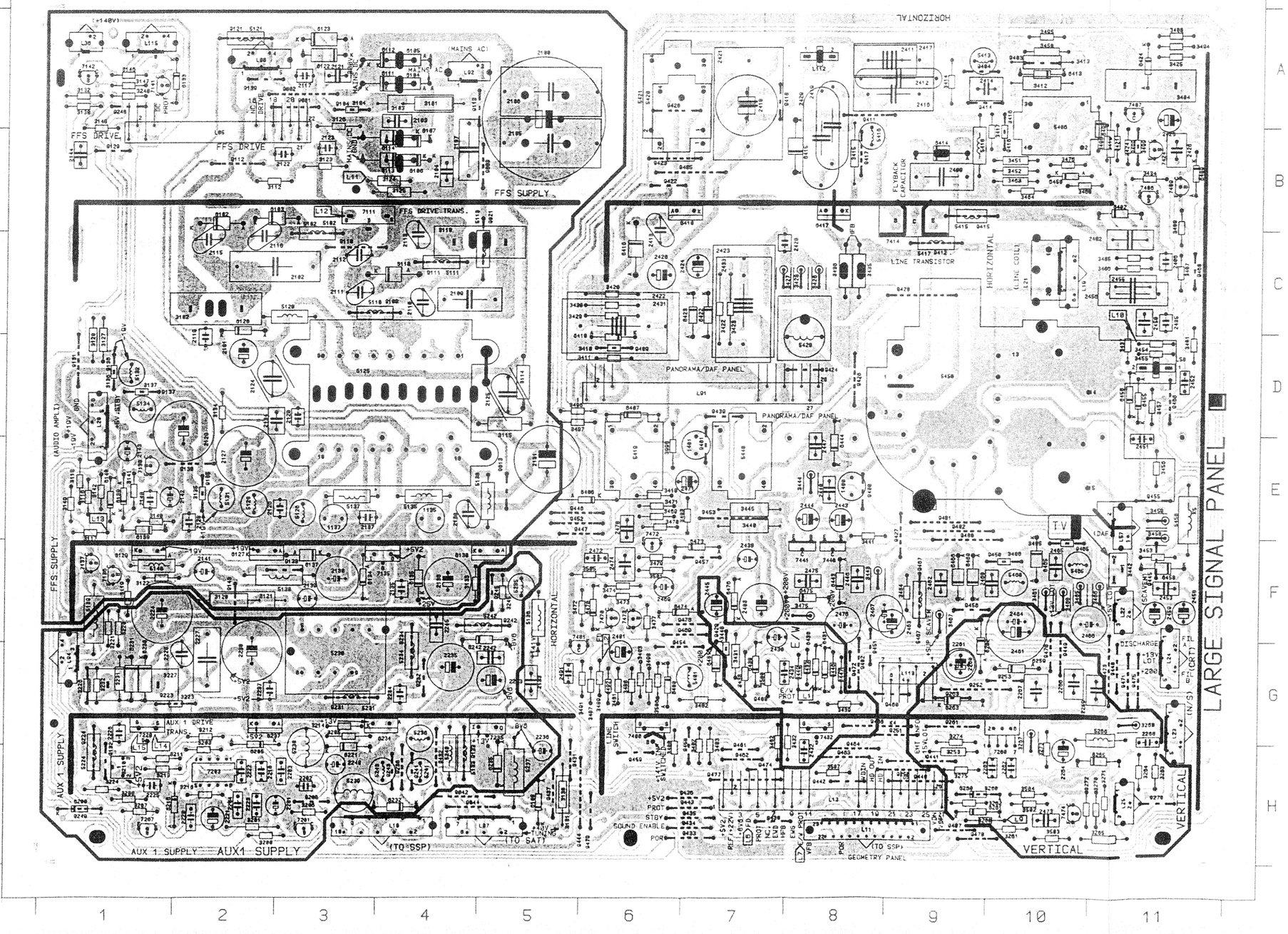




Oscillograms / Oscillogrammen / Oscillogrammes



6. Large signal panel / Groß-Signal Platte / GFL2.20 E 6 Platine forts signeaux



L2 LARGE SIGNAL PANEL

◇

! WARNING: DO NOT MEASURE VOLTAGES ACROSS D-S OF TS7111 AND TS7228

L11 200mV/div 5µs/div

L12 2V/div 5µs/div

L13 1V/div 50ms/div

L14 200mV/div 2µs/div

L15 2V/div 2µs/div

MAIN FFS-SUPPLY

TO AU

MAINS GLOBAL

TO FFS CONTROL

1-SENSE 0V (0V)
POWER-OFF 0V (0V)
DEMAG 0V (0V)
VCC 18V8 (9V2)
GND-HOT
DRIVE 1V7 (0V)
NC
DC-PROT 0V (2V6)
GND-SENSE
SENSE 0V (0V)
VB +5V.ST.BY
5V1 (5V2)

141V (0V5)

(--V) = STANDBY

TO AUDIO AMPLIFIER

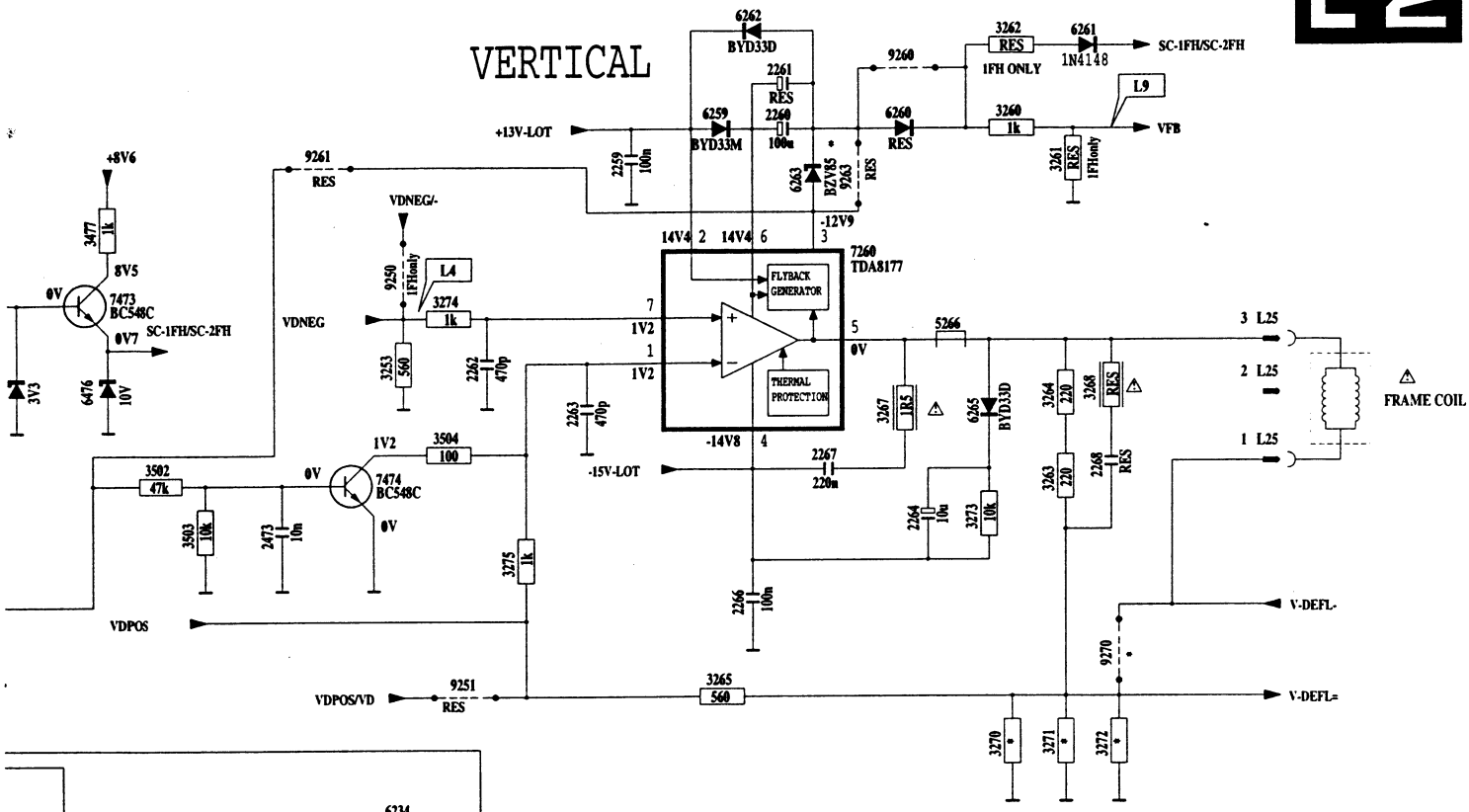
AUX1 SUPPLY

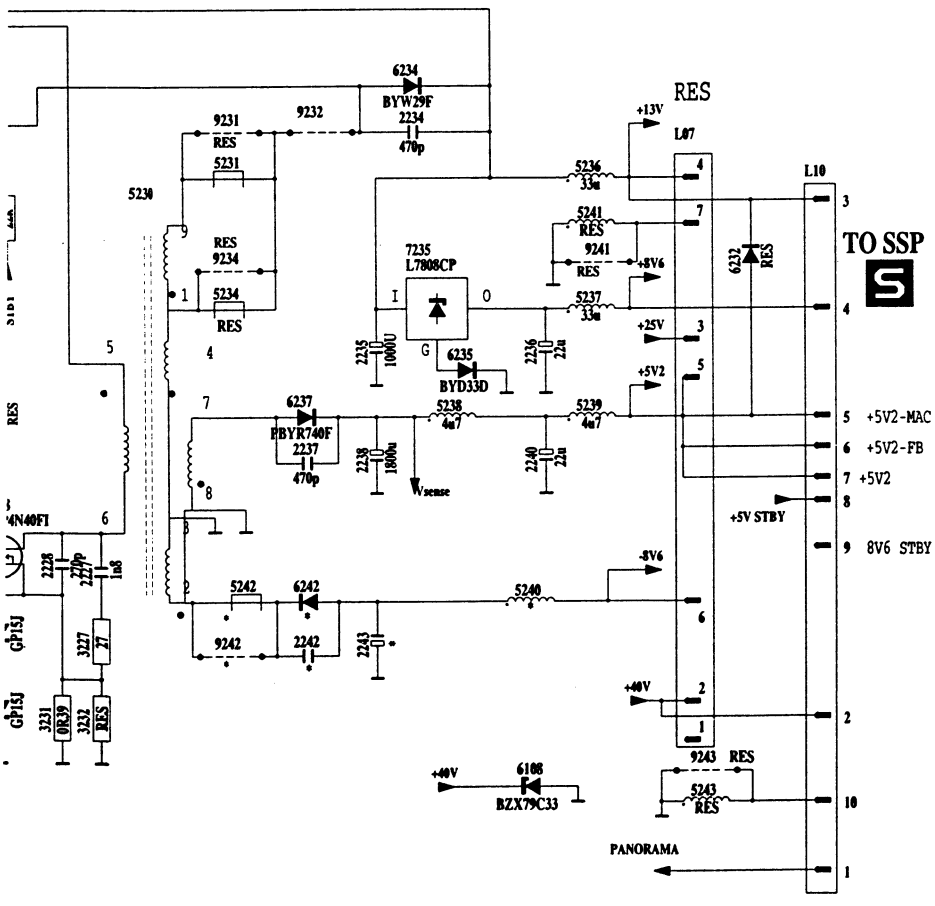
4	6135 G10	6221 G16	6259 A23	6474 C18	7142 J 7	7472 E15	9113 E 5	9223 J17	9248 I 4	9457 C18	L07 F23	L36 E11
6	6137 G 9	6230 J18	6260 A24	6476 C19	7201 I14	7473 C19	9121 G 3	9224 H18	9249 I 5	K1 C 1	L08 D 2	L92 E 3
6	6138 I 8	6231 J18	6261 A25	7111 F 4	7203 G17	7474 D21	9133 G11	9231 F20	9250 B21	K2 C 1	L10 G23	L94 E 1
0	6139 I10	6232 G23	6262 A23	7135 G11	7207 G17	9021 D 7	9135 C12	9232 F20	9251 E21	K3 C 1	L115 J 1
0	6140 I11	6234 F21	6263 B23	7136 I12	7228 I18	9102 E 7	9136 D12	9234 G20	9260 A24	K4 C 1	L20 C14
0	6200 I 5	6235 H21	6265 C25	7137 J11	7235 G21	9104 F 3	9137 D12	9241 G22	9261 B20	K5 D 1	L25 D26
8	6205 H14	6237 H20	6470 B17	7138 I 9	7260 B24	9109 F 8	9138 H10	9242 J20	9263 B24	K6 D 1	L25 C26
1	6216 J16	6242 I20	6473 E17	7141 K 8	7470 B17	9111 F 7	9139 H 3	9243 K23	9270 E25	L05 J 1	L25 C26

19 20 21 22 23 24 25 26 27

L2

VERTICAL





DIVERSITYLIST SUPPLY GFL-V2					
POS	EUROPE	GLOBAL	POS	NON-SAT	SAT
2100	220uF/385V	RES	1135	RES	2,5AT
2103	2n2	RES	2135	RES	470pF
2104	2n2	RES	2136	RES	680uF
2105	RES	680nF/400V	2242	RES	1n5
2106	RES	680nF/400V	2243	RES	220uF
2120	RES	470pF	3133	RES	5k6
2124	RES	100pF	5135	RES	BEAD
2125	3n3	1nF	5240	RES	33uH
2140	RES	470pF	6135	RES	BYD33D
2142	RES	4u7	6242	RES	BYD33D
2143	RES	4u7	9133	RES	YES
2144	33n	RES	9242	RES	YES
3103	22k	RES			
3122	RES	2K2			
3132	10k	RES			
3138	5k6	RES			
3140	RES	1k			
3141	RES	10			
3142	RES	1k5			
3146	2K2	RES			
3147	22K	RES			
3148	120K	RES			
5140	RES	33uH			
6104	GP15J-16	RES			
6105	GP15J-16	RES			
6106	GP15J-16	RES			
6107	GP15J-16	RES			
6133	1N4148	RES			
6138	RES	BYD33D			
6139	RES	1N4148			
6140	RES	C6V8			
7138	RES	BC328/40			
7141	BC548B	RES			
7142	BC558B	RES			
9139	RES	YES			

CHASSIS-GFL

CL46615018/051.I.SP2
170195

19 20 21 22 23 24 25 26 27

PCS 80 678

1400 C21 2411 I13 2418 I16 2424 I17 2431 G15 2440 D20 2450 G24 2458 J25 2464 I26 2481 B 7 3404 E 9 3410 I14 3416 I13 3423 J18 3429 H15 3435 E16
1401 C18 2412 I14 2419 F14 2425 N 6 2432 J12 2443 C20 2451 G25 2459 J25 2465 L23 2491 C 7 3405 E 8 3411 I15 3417 I14 3424 M 7 3430 H15 3436 E16
2402 E 8 2413 I12 2420 G14 2426 H 7 2433 J19 2444 B20 2452 G25 2460 I23 2466 L25 3400 B 7 3406 E 9 3412 F10 3419 F 8 3425 G 6 3431 K14 3437 C23
2403 B11 2414 G11 2421 H15 2428 H18 2434 J13 2445 K13 2453 J24 2461 I25 2467 H25 3401 I 7 3407 I 7 3413 F10 3420 H14 3426 G17 3432 J12 3438 L12
2406 F 9 2416 I13 2422 H15 2429 F13 2435 H10 2446 D21 2455 P22 2462 H23 2475 B23 3402 B 7 3408 G 5 3414 F11 3421 G 7 3427 G17 3433 K14 3439 J11
2409 F12 2417 I14 2423 J18 2430 L14 2438 J15 2447 B21 2456 P23 2463 H25 2476 B24 3403 B 6 3409 I 7 3415 G13 3422 J18 3428 G18 3434 I 8 3440 C18

L1 LARGE SIGNAL PANEL

S TO SSP

J TO GEOMETRY PANEL

V SCAVEM

AP N/S CORR

R TO CRT

AB TO PANADAF

LINE SWITCH

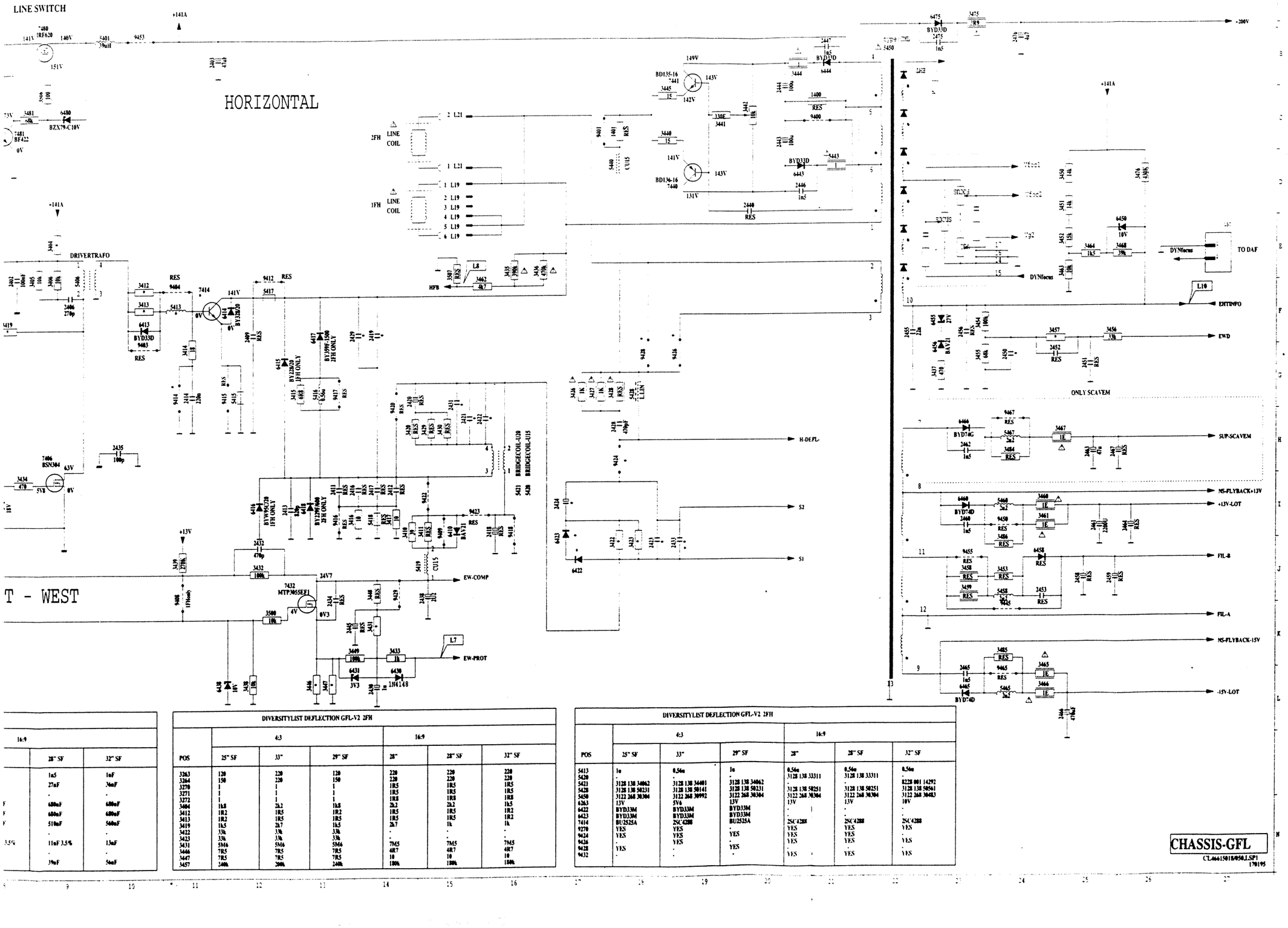
EAST - WEST

DIVERSITYLIST DEFLECTION GFL-V2 2FH

	4:3			16:9		
POS	25" SF	33"	29" SF	28"	28" SF	32" SF
2409	390p	1n8	1n8	1n5	1n5	1nF
2412	24nF	27nF	24nF	27nF	27nF	36nF
2419	-	10nF	-	-	-	-
2421	560nF	560nF	560nF	680nF	680nF	680nF
2422	-	-	-	680nF	680nF	680nF
2423	-	560nF	560nF	510nF	510nF	560nF
2424	1nF	1nF	1nF	-	-	-
2429	11nF	-	11nF	11nF 3.5%	11nF 3.5%	13nF
2433	470nF	-	-	-	-	-
2450	33nF	56nF	56nF	39nF	39nF	56nF

stufe / Bases de temps line et trame

L1



16:9		
	28" SF	32" SF
	1n5	1nF
	27nF	36nF
	-	-
F	680nF	680nF
F	680nF	680nF
F	510nF	560nF
	-	-
3.5%	11nF 3.5%	13nF
	-	-
	39nF	56nF

DIVERSITYLIST DEFLECTION GFL-V2 2FH						
	4:3			16:9		
POS	25" SF	33"	29" SF	28"	28" SF	32" SF
3263	120	220	120	220	220	220
3264	150	220	150	220	220	220
3270	1	1	1	1R5	1R5	1R5
3271	1	1	1	1R5	1R5	1R5
3272	1	1	1	1R8	1R8	1R8
3404	1k8	2k2	1k8	2k2	2k2	1k5
3412	1R2	1R5	1R2	1R5	1R5	1R2
3413	1R2	1R5	1R5	1R5	1R5	1R2
3419	1k5	2k7	1k5	2k7	1k	1k
3422	33k	33k	33k	-	-	-
3423	33k	33k	33k	-	-	7M5
3431	5M6	5M6	5M6	7M5	7M5	4R7
3446	7R5	7R5	7R5	4R7	4R7	10
3447	7R5	7R5	7R5	10	10	180k
3457	240k	200k	240k	180k	180k	

DIVERSITYLIST DEFLECTION GFL-V2 2FH						
	4:3			16:9		
POS	25" SF	33"	29" SF	28"	28" SF	32" SF
5413	1n	0.56n	1n	0.56n	0.56n	0.56n
5420	-	-	-	3122 138 33311	3122 138 33311	8228 001 14292
5421	3122 138 34062	3122 138 34401	3122 138 34062	-	-	3122 138 50561
5428	3122 138 50231	3122 138 50141	3122 138 50231	3122 138 50251	3122 138 50251	3122 268 30403
5450	3122 268 30304	3122 268 30992	3122 268 30304	3122 268 30304	3122 268 30304	10V
6263	13V	5V6	13V	13V	13V	-
6422	BYD33M	BYD33M	BYD33M	-	-	-
6423	BYD33M	BYD33M	BYD33M	-	-	2SC4288
7414	BU2525A	2SC4288	BU2525A	2SC4288	2SC4288	YES
9270	YES	YES	-	YES	YES	YES
9424	YES	YES	YES	YES	YES	-
9426	-	YES	-	YES	YES	YES
9428	YES	-	YES	-	-	-
9432	-	-	-	YES	YES	YES

CHASSIS-GFL

CL46615018/950.LSP1
170195

L1
1V/div
5µs/div

L6
2V/div
0.5s/div

L2
500mV/div
5µs/div

L7
500mV/div
0.5s/div

L3
1V/div
2ms/div

L8
1V/div
10µs/div

L4
100mV/div
2ms/div

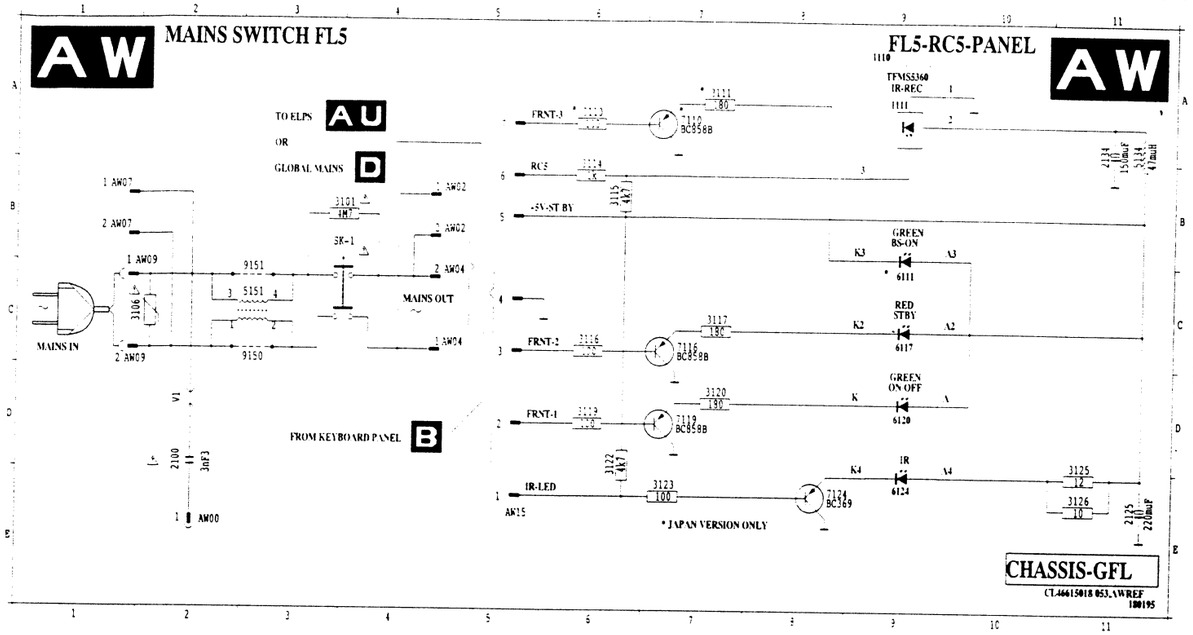
L9
5V/div
2ms/div

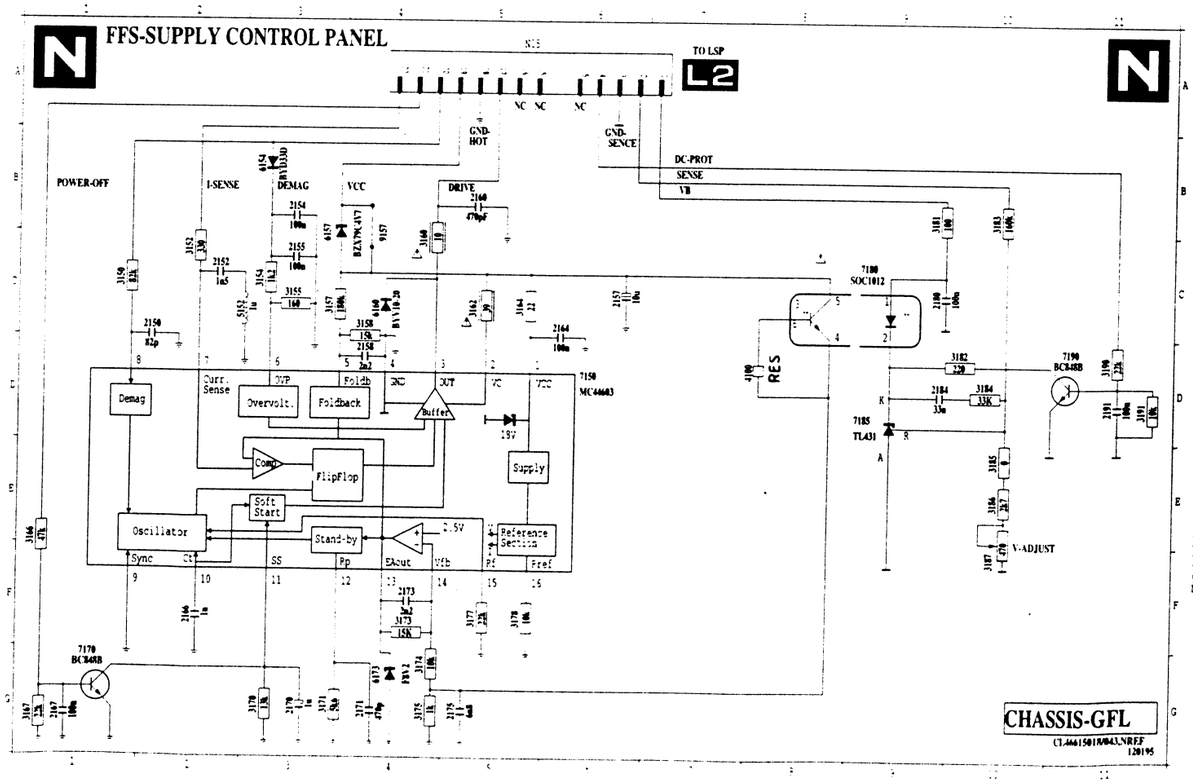
L5
500mV/div
2ms/div

L10
2V/div
2ms/div

Mains switch FL5 / FFS drive panel /

FFS Drive Platte

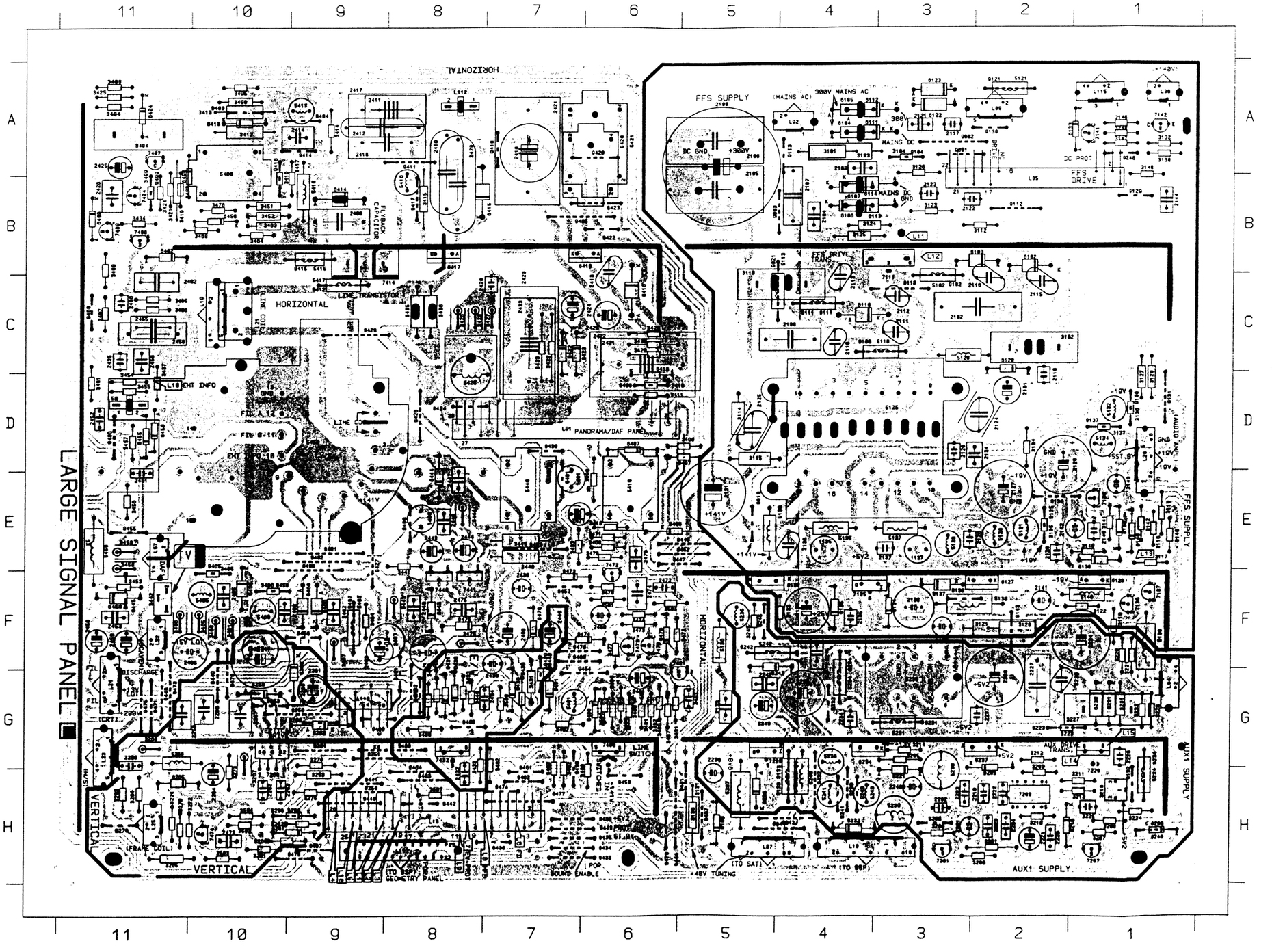




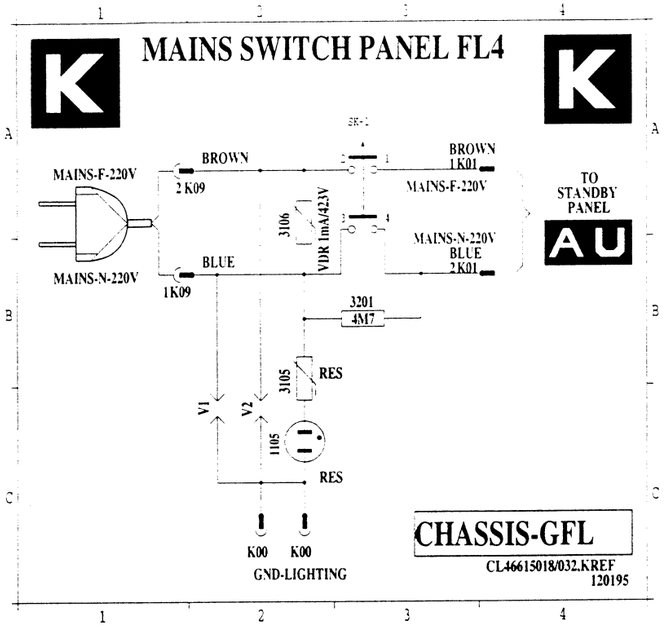
PCS 80 681

Large signal panel / Groß-Signal Platte / Platine forts signeaux

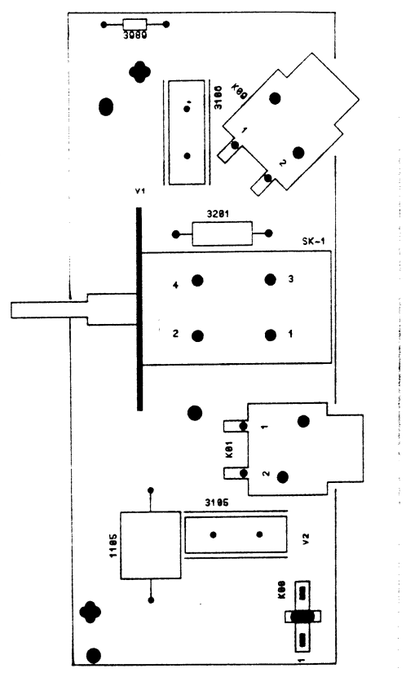
GFL2.20 E 9

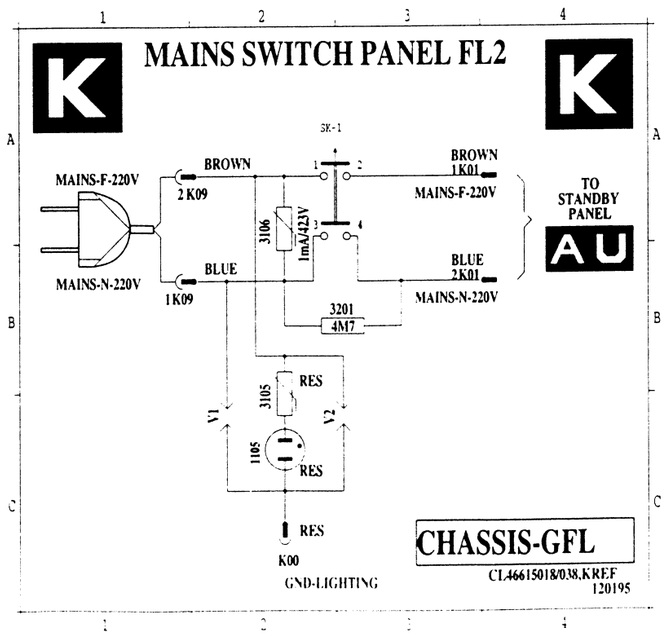


Mains switch FL2, FL4

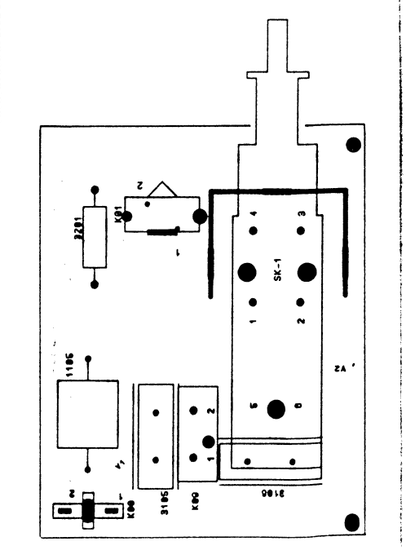


Mains switch FL4



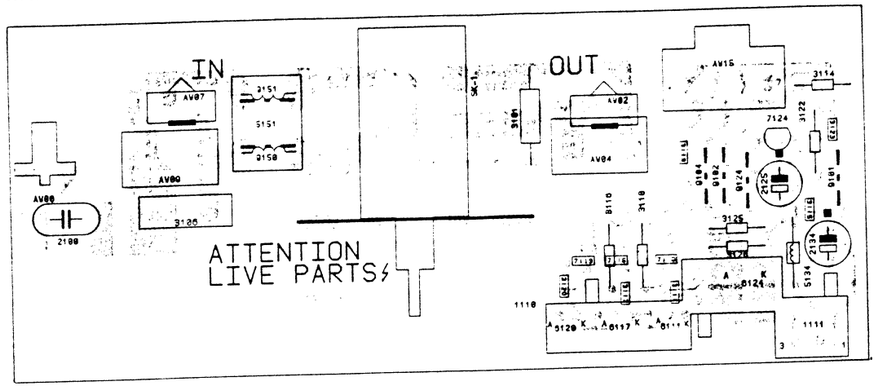


Mains switch FL2.



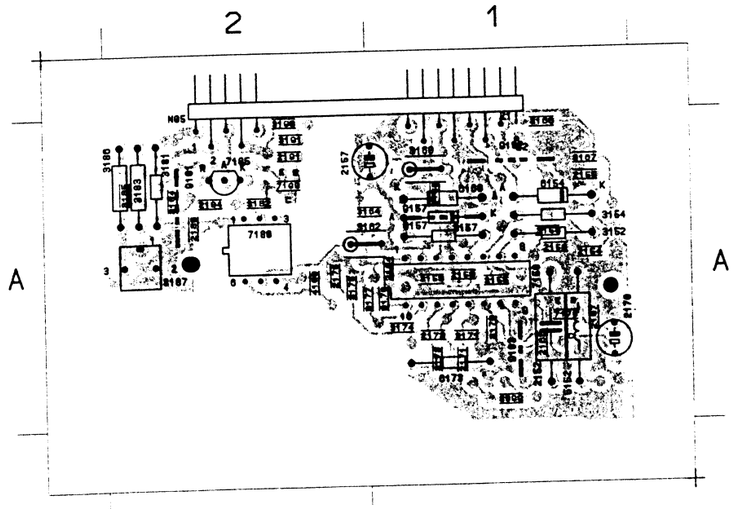
/ Platine FFS drive

Mains switch FL5

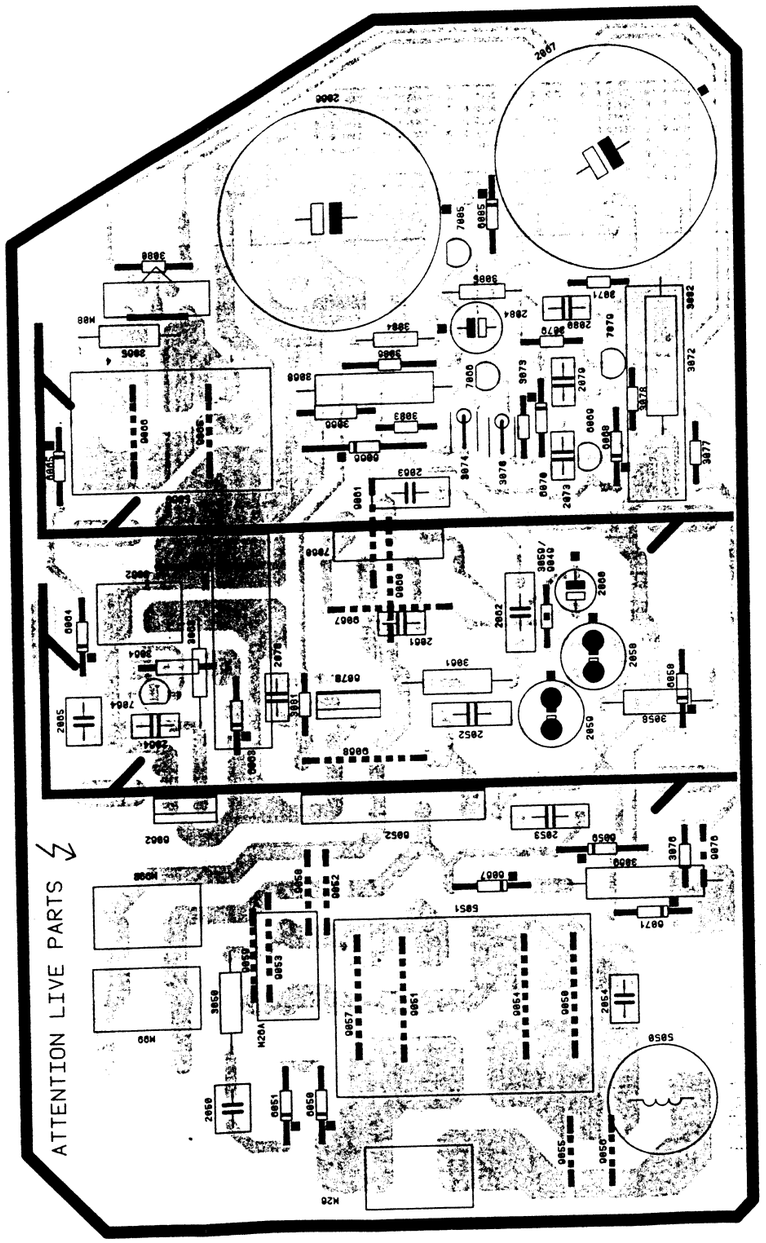


FFS drive panel

2150 A 1	2154 A 1	2180 A 2	3157 A 1	3170 A 1	3181 A 2	3190 A 2	5150 A 1	9101 A 2
2152 A 1	2166 A 1	2184 A 2	3158 A 1	3171 A 1	3182 A 2	3191 A 2	5173 A 1	9102 A 1
2154 A 1	2167 A 1	2191 A 2	3159 A 1	3173 A 1	3183 A 2	3999 A 1	7150 A 1	9103 A 1
2156 A 1	2170 A 1	3150 A 1	3162 A 2	3174 A 1	3184 A 2	4100 A 2	7170 A 1	9157 A 1
2157 A 1	2171 A 1	3152 A 1	3164 A 1	3175 A 2	3185 A 2	5152 A 1	7180 A 2	N05 A 2
2158 A 1	2173 A 1	3154 A 1	3166 A 1	3177 A 2	3186 A 2	0154 A 1	7185 A 2	
2160 A 1	2175 A 2	3155 A 1	3167 A 1	3178 A 1	3187 A 2	0157 A 1	7190 A 2	



Multi voltage (global mains)



2050 C 4 2059 B 5 2064 C 9 2078 D11 3057 B 3 3063 C 8 3069 D12 3074 C12 3080 E13 3085 D10 3051 C 3 6062 B 3 3057 C12 3073 D11 7072 B12 3052 B 4 9065 B13 M26A A 1
2052 C 3 2060 D 3 2065 B13 2079 F13 3058 F 5 3064 D 8 3070 B10 3075 D13 3081 D10 3052 C 3 6063 B 3 3058 F12 3074 D12 7085 B12 3053 B 5 9066 D13 M99 A 2
2053 B 5 2061 D 7 2066 B 9 2080 F14 3059 F 5 3065 B13 3071 F11 3076 D13 3082 F12 3053 B 4 6064 B13 3059 F12 7064 C 9 9050 B 4 3054 C 4 9067 D13 M99B A 5
2054 A 4 2062 D 8 2067 E 9 2084 C10 3061 D 3 3066 B10 3072 F12 3077 E13 3083 D11 3054 C 4 6065 B13 3060 F11 7066 D12 9051 B 4 3055 C 5 9068 B14
2058 F 5 2063 D 9 2073 F10 3050 C 4 3062 B 3 3068 E 9 3073 F10 3078 E12 3084 C13 3055 B12 3059 F 4 6066 C12 3071 D12 3056 C 5 3061 F 4 M08 B 2
M26 B 2

GLOBAL MAINS PANEL

TO STANDBY PANEL **AU**

FROM MAINS FILTER **K**

VAC-IN

M26A M99 M99B

2054 RES

9056 9055 9054 9050 5051 9051 9057

5050 56uH

9058 9052 9053 9059

TP1 TP2 TP7 TP8 TP9 TP10

6050 BZX79-C30 6051 BZX79-C30 2050 33nF 3050 220

2053 2n2 2052 2n2 6052 D5SBA60S

VAC-1 VAC-2

TP12 TP13

3057 0R1 ** 3062 5R6 * 6062 BT151-650R

3063 330 * 2064 220nF 6063 BZX79-C8V2 7064 PH2369

3064 330 *

3061 4R7 2062 100nF 2063 100nF

2060 100uF * 2061 100nF

7060 STR80145A

2059 4u7 2058 4u7

6059 BYD33-M 6058 BYD33-M 3058 2R2 3059 RES 9049

9060 ** 9061

COMMON

2065 33nF 6064 BZX79-C30 6065 BZX79-C30 3065 220

9065 5065 9066 TP3 TP4 M08 VDC-OUT

2066 470uF 3066 220K 3084 6k8 2084 470uF 6085 BZX79-F6V2 3085 220k 7085 2SA1699E

3086 33k 3081 2k7 2078 100nF 6078 BT152-600R 3083 68 7066 * 2SA1699

6066 BYD33-M 3074 3k3

VAC-1 6067 BYD33-M 3069 27k 9076 3076 10k TP5 VCC

TO LSP **L2**

6071 BZX79-C43

3068 100k 2067 470uF 6068 BYD33-M 3077 100k

6069 SF0R5J43 3070 820 * 6070 BZX79-C6V8 TP6 3071 6k8

3078 100k 3080 100k TP11 Power-off

7079 * BC548B

3073 2k2 2073 100nF ** 3082 0R1 3072 0R1 3079 22k 2079 100nF 2080 100nF

* MULTIVOLTAGE VERSION

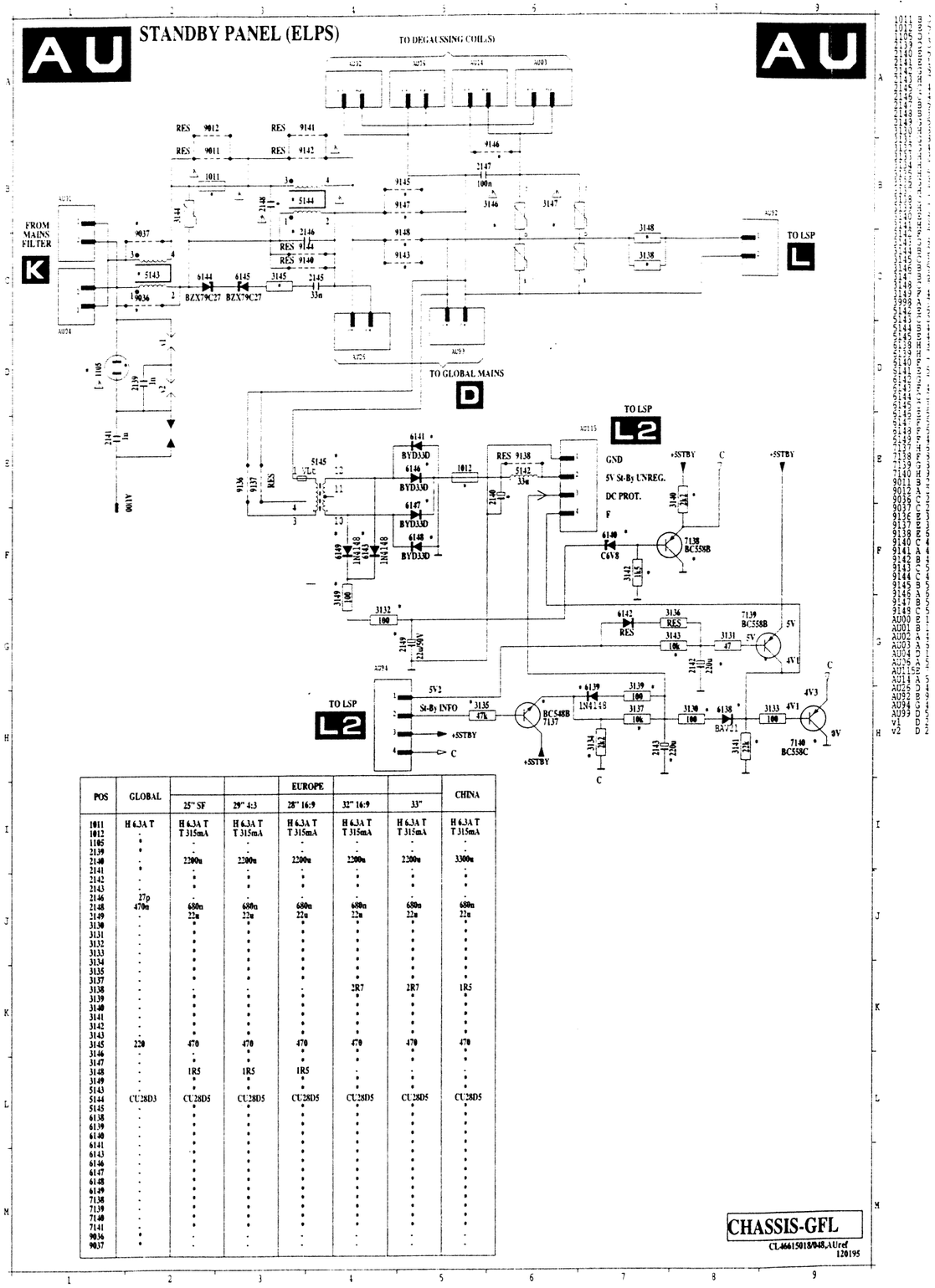
** 110V ONLY *

CHASSIS-GFL

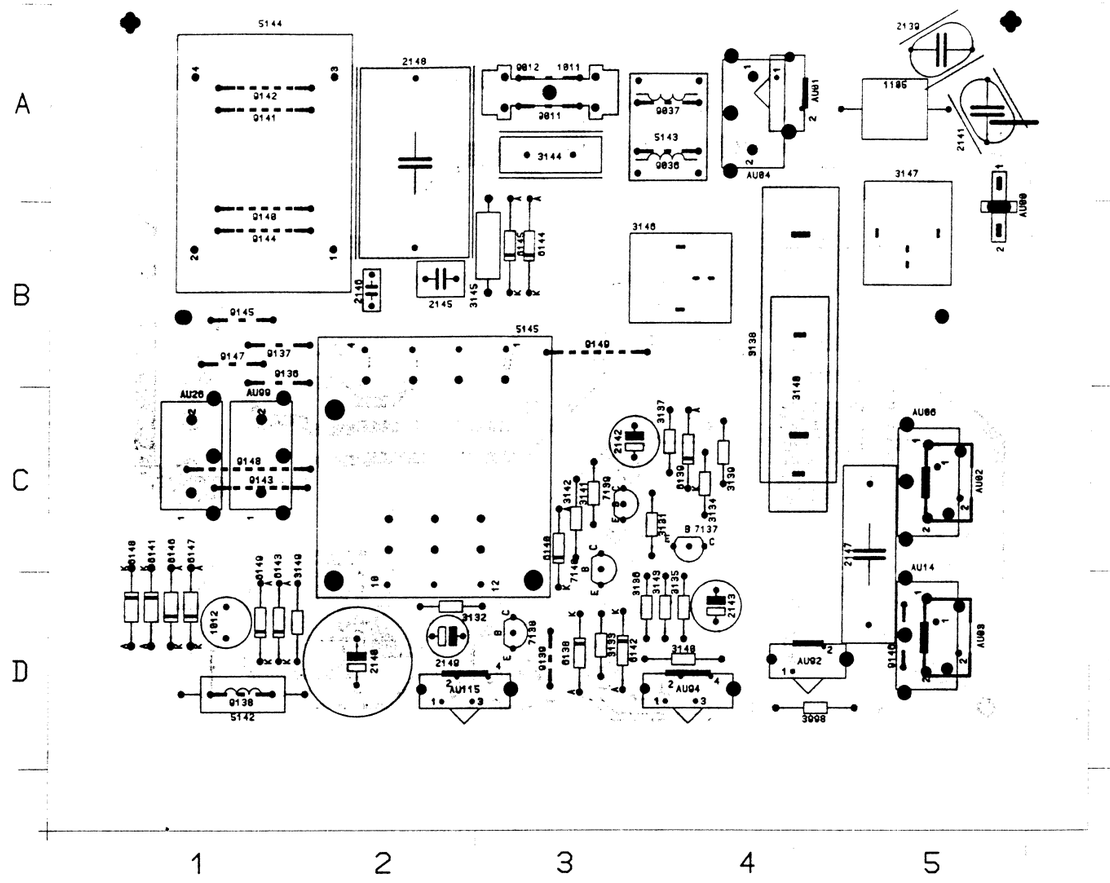
CL46615018/056,MREF
180195

Standby supply (ELPS) / Bereitschaftnetzteil (ELPS) / Allimentation de veille (ELPS)

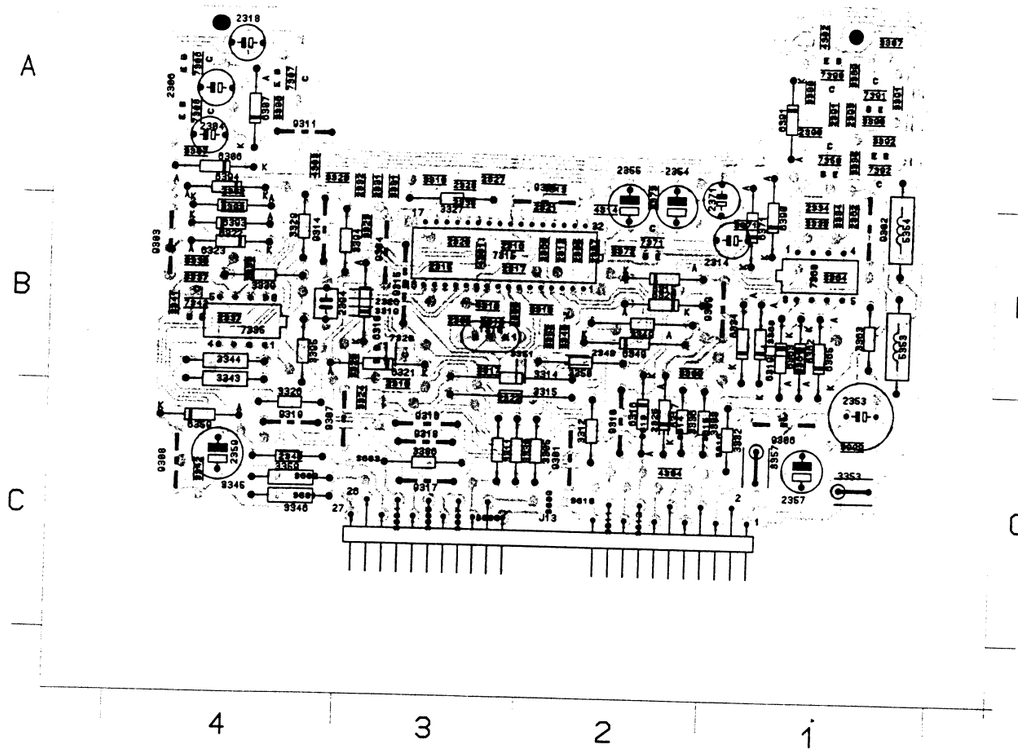
GFL2.20 E 12

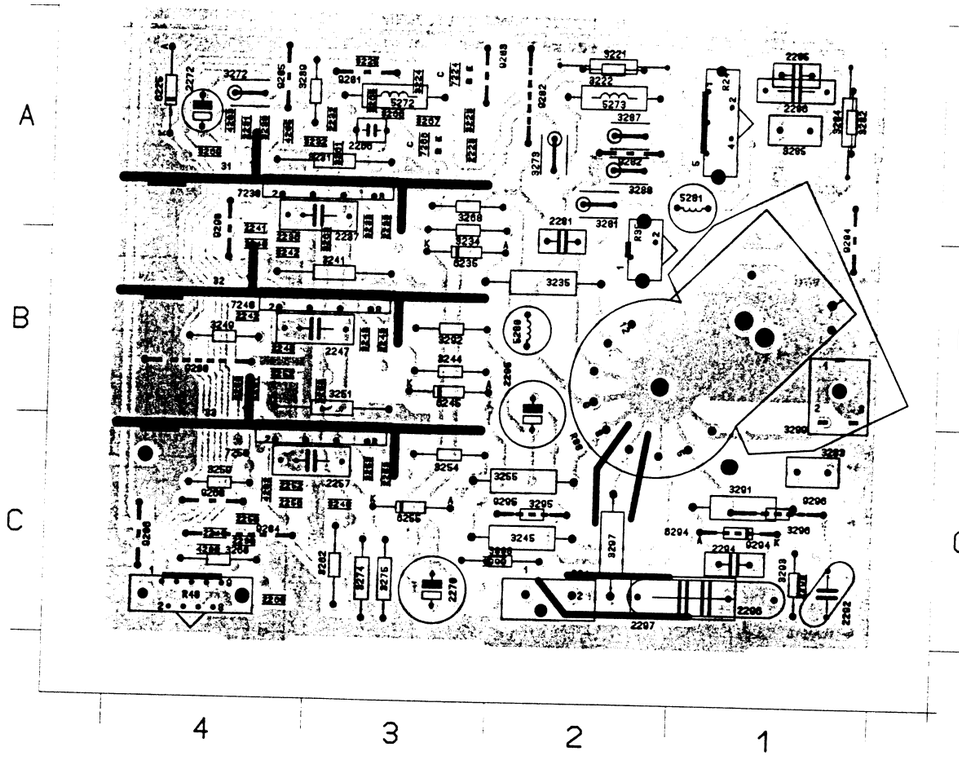


POS	GLOBAL	EUROPE					CHINA
		25" SF	29" 4:3	28" 16:9	32" 16:9	33"	
1011	H 6.3A T	H 6.3A T T 315mA	H 6.3A T T 315mA	H 6.3A T T 315mA	H 6.3A T T 315mA	H 6.3A T T 315mA	H 6.3A T T 315mA
1012	-	-	-	-	-	-	-
1105	*	-	-	-	-	-	-
2139	*	-	-	-	-	-	-
2140	-	2200u	2200u	2200u	2200u	2200u	3300u
2141	*	*	*	*	*	*	*
2142	-	-	-	-	-	-	-
2143	-	-	-	-	-	-	-
2146	27p	-	-	-	-	-	-
2148	470n	680n	680n	680n	680n	680n	680n
2149	-	22u	22u	22u	22u	22u	22u
3130	-	*	*	*	*	*	*
3131	-	*	*	*	*	*	*
3132	-	*	*	*	*	*	*
3133	-	*	*	*	*	*	*
3134	-	*	*	*	*	*	*
3135	-	*	*	*	*	*	*
3137	-	*	*	*	*	*	*
3138	-	*	*	*	2R7	2R7	1R5
3139	-	*	*	*	*	*	*
3140	-	*	*	*	*	*	*
3141	-	*	*	*	*	*	*
3142	-	*	*	*	*	*	*
3143	-	*	*	*	*	*	*
3145	220	470	470	470	470	470	470
3146	-	*	*	*	*	*	*
3147	-	*	*	*	*	*	*
3148	-	1R5	1R5	1R5	*	*	*
3149	-	*	*	*	*	*	*
5143	-	*	*	*	*	*	*
5144	CU28D3	CU28D5	CU28D5	CU28D5	CU28D5	CU28D5	CU28D5
5145	-	*	*	*	*	*	*
6138	-	*	*	*	*	*	*
6139	-	*	*	*	*	*	*
6140	-	*	*	*	*	*	*
6141	-	*	*	*	*	*	*
6143	-	*	*	*	*	*	*
6146	-	*	*	*	*	*	*
6147	-	*	*	*	*	*	*
6148	-	*	*	*	*	*	*
6149	-	*	*	*	*	*	*
7138	-	*	*	*	*	*	*
7139	-	*	*	*	*	*	*
7140	-	*	*	*	*	*	*
7141	-	*	*	*	*	*	*
9036	*	*	*	*	*	*	*
9037	*	*	*	*	*	*	*



DDP panel / DDP Platte / Platine DDP





J1
1V/div
5µs/div

J2
500mV/div
5µs/div

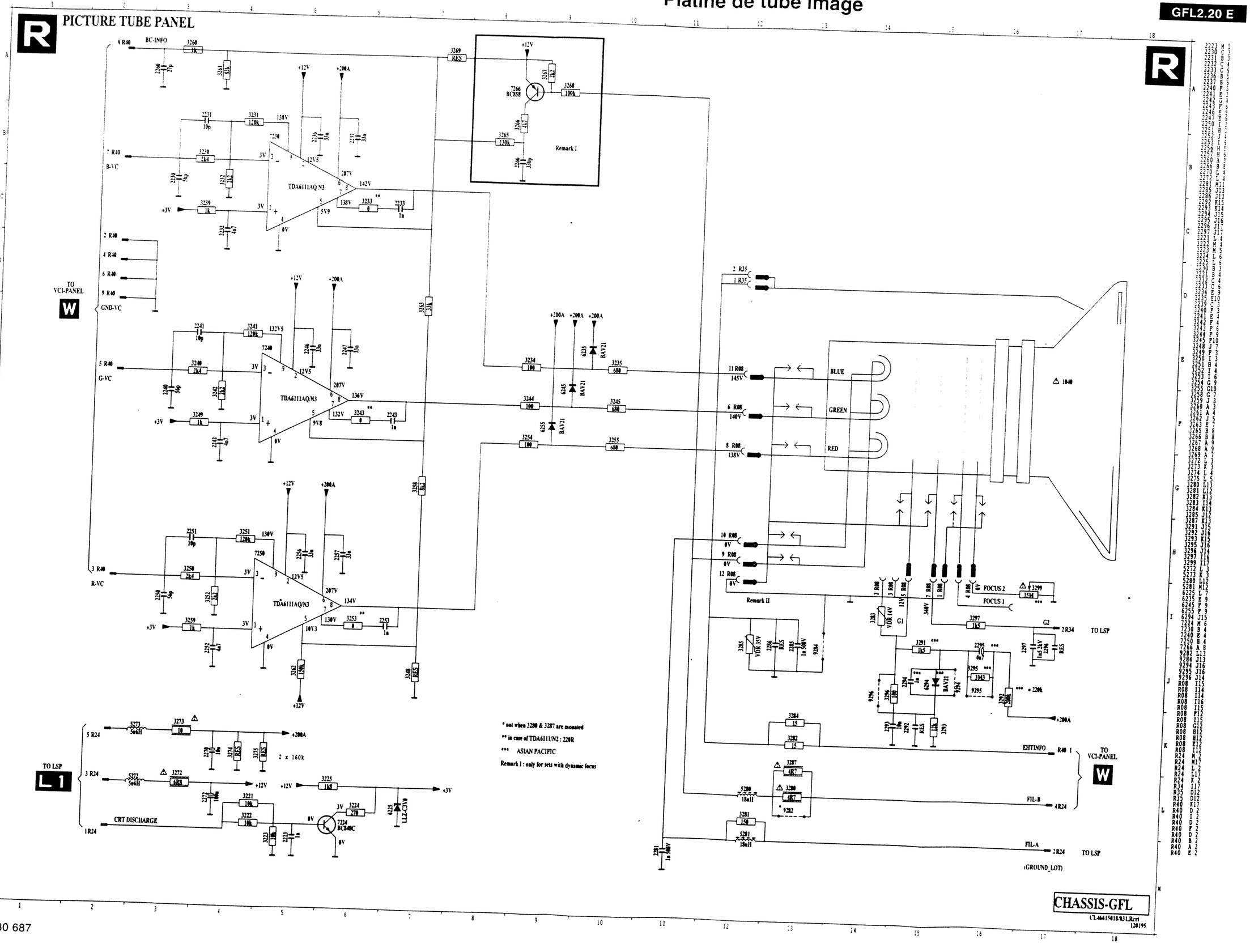
J3
500mV/div
2ms/div

J4
100mV/div
2ms/div

J5
1V/div
2ms/div

Picture tube panel / Bildröhren-Platte / Platine de tube image

PICTURE TUBE PANEL

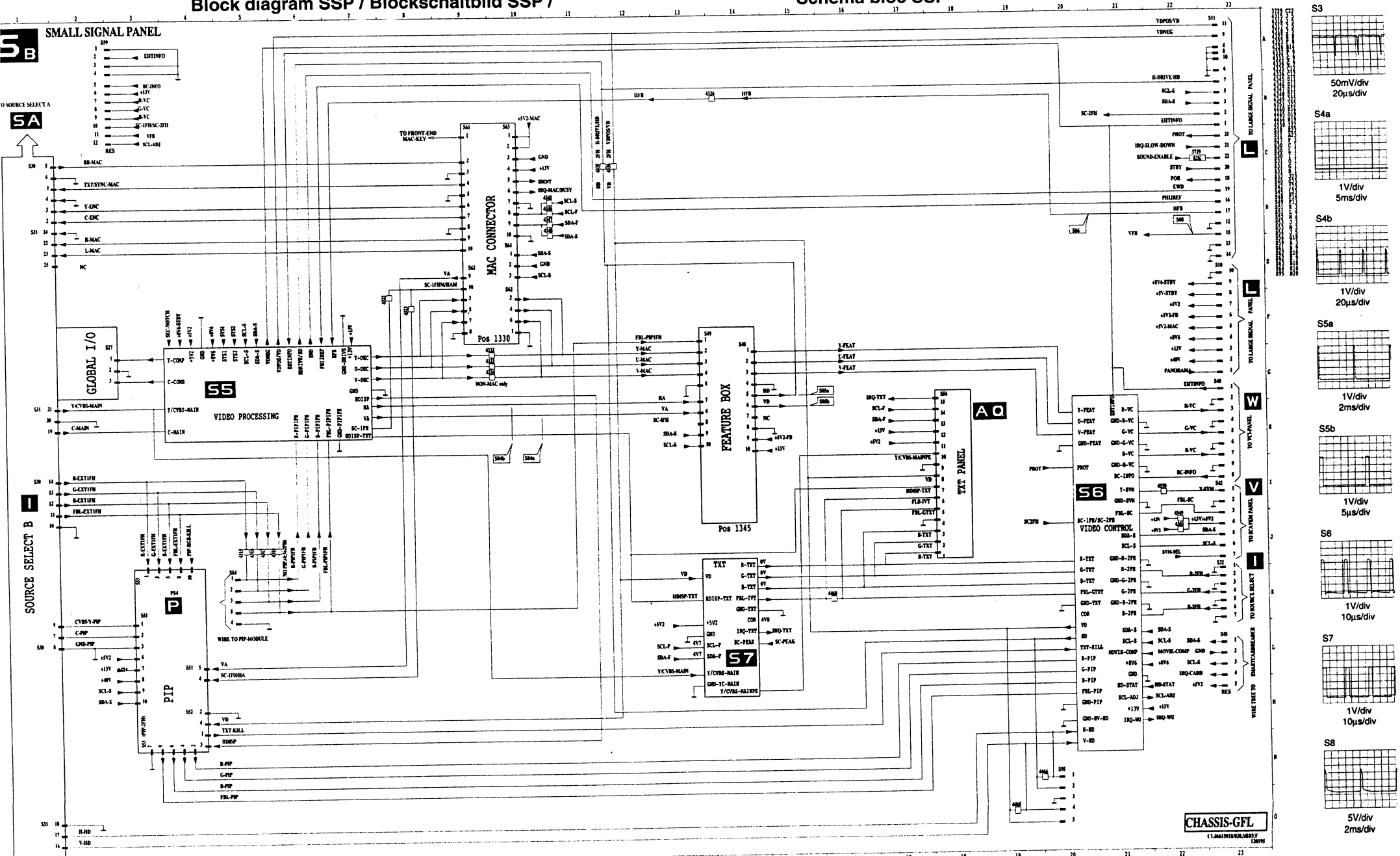


CHASSIS-GFL

CL46615018/31.Rev1
120195

PCS 80 687

Block diagram SSP / Blockschaltbild SSP / Schéma bloc SSP



S3
50mV/div
20µs/div

S4a
1V/div
5ms/div

S4b
1V/div
20µs/div

S5a
1V/div
2ms/div

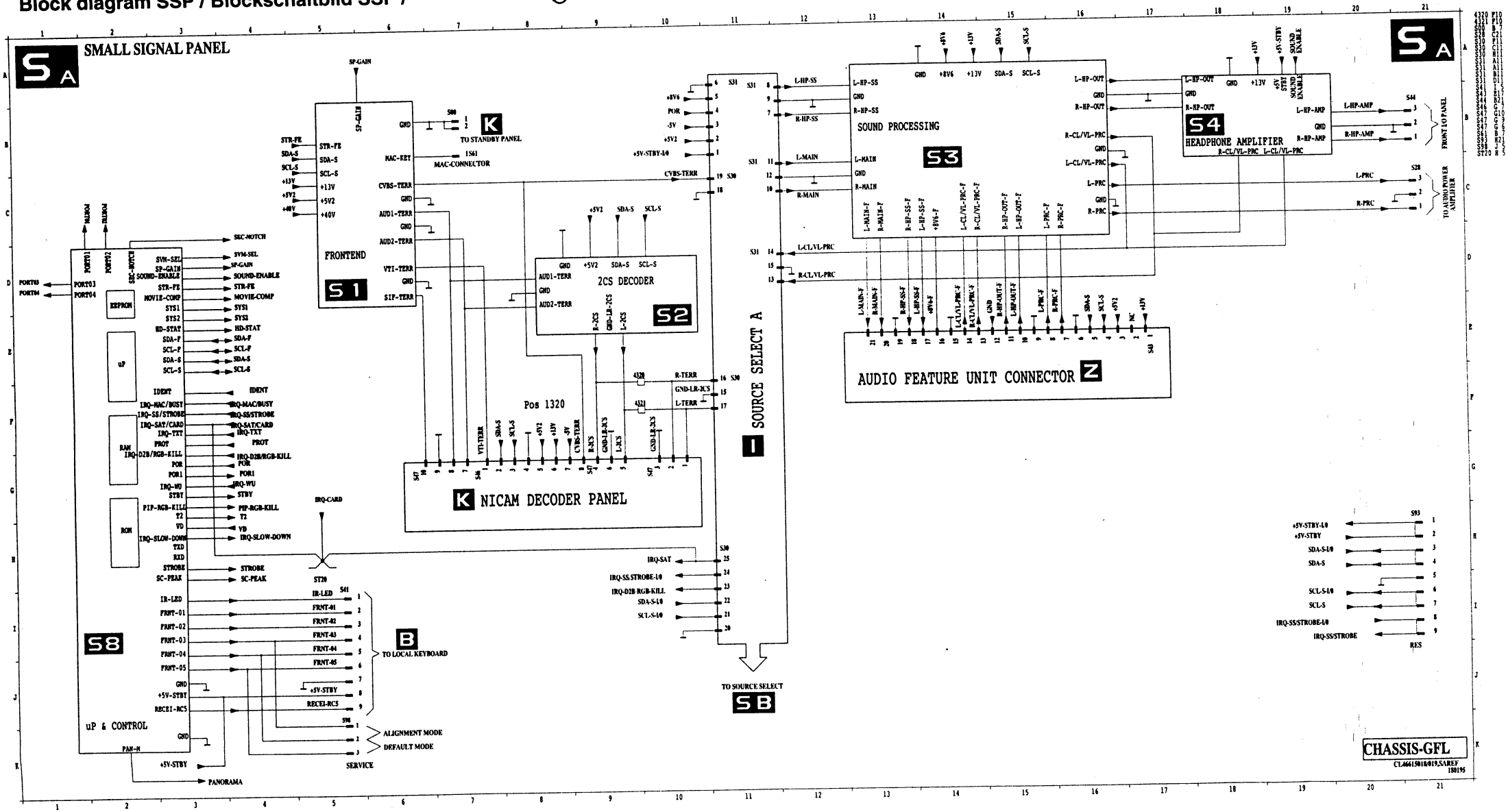
S5b
1V/div
5µs/div

S6
1V/div
10µs/div

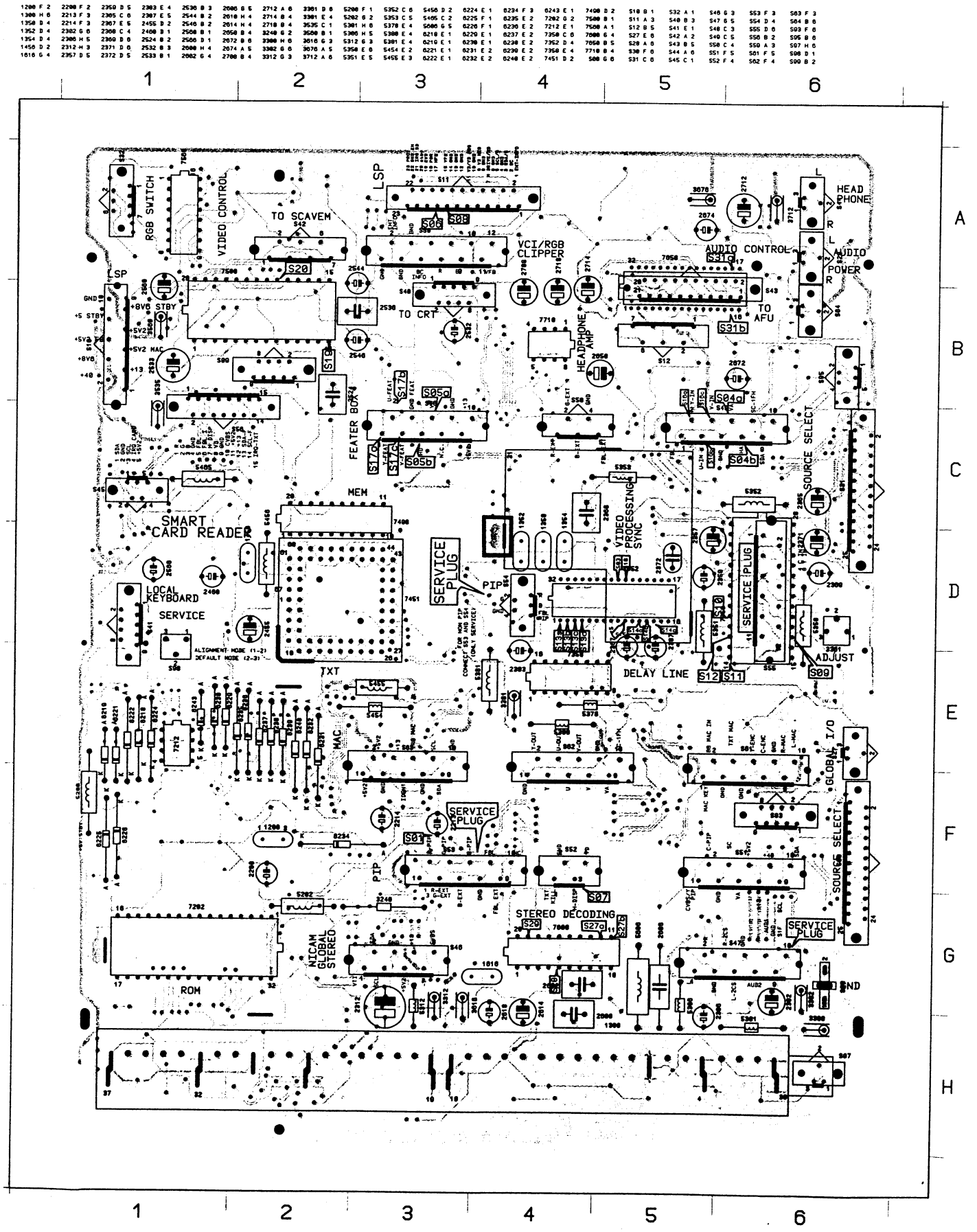
S7
1V/div
10µs/div

S8
5V/div
2ms/div

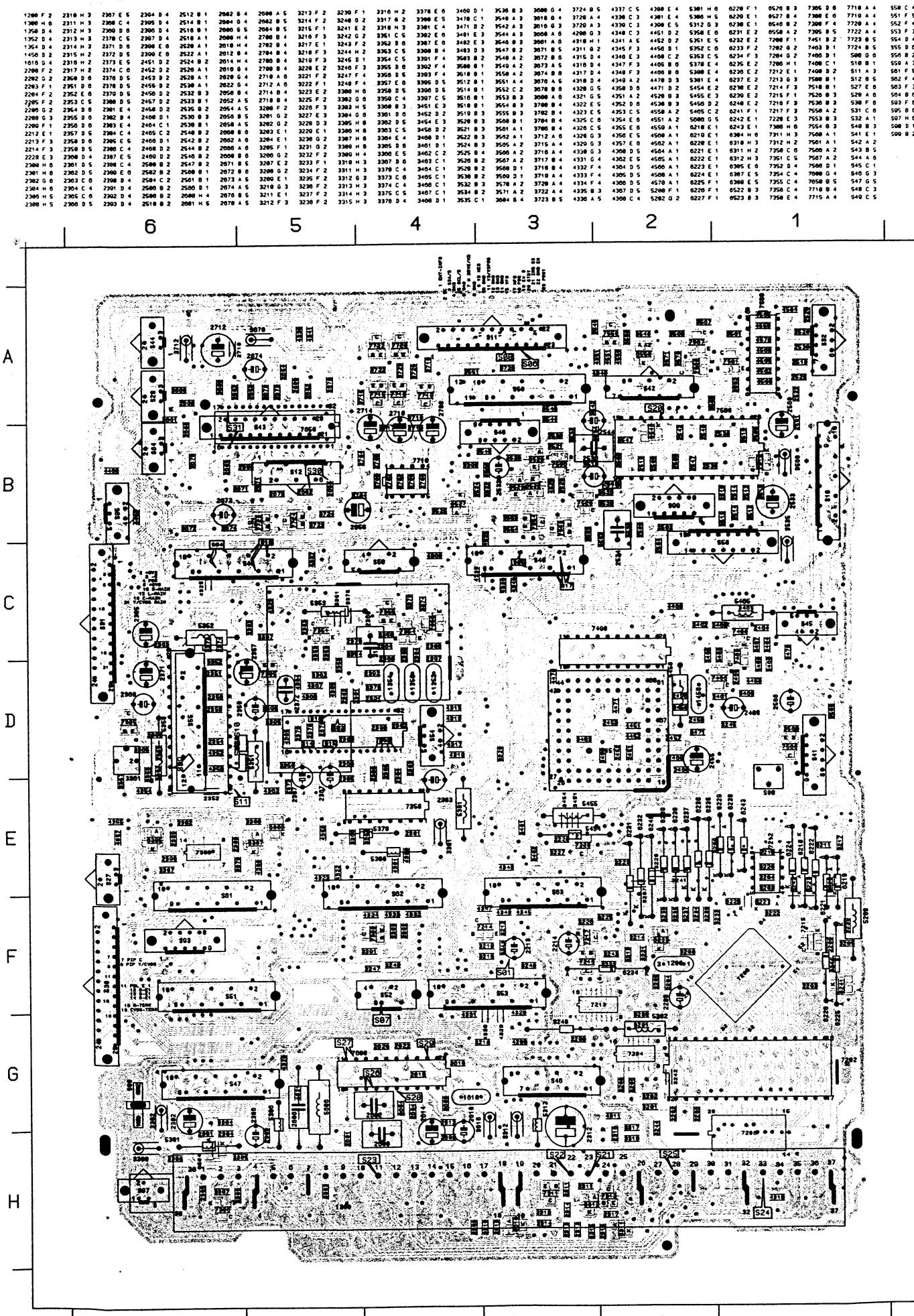
Block diagram SSP / Blockschaltbild SSP / 16B Schéma bloc SSP



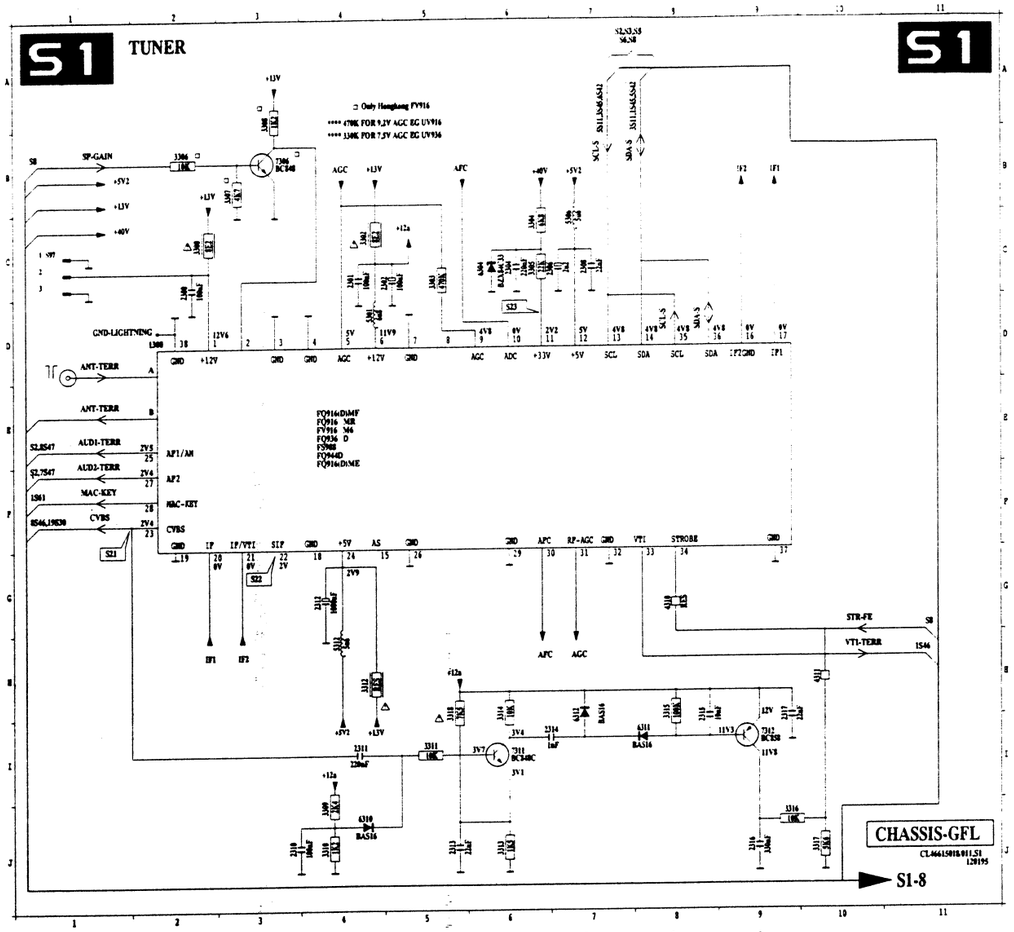
Small signal panel

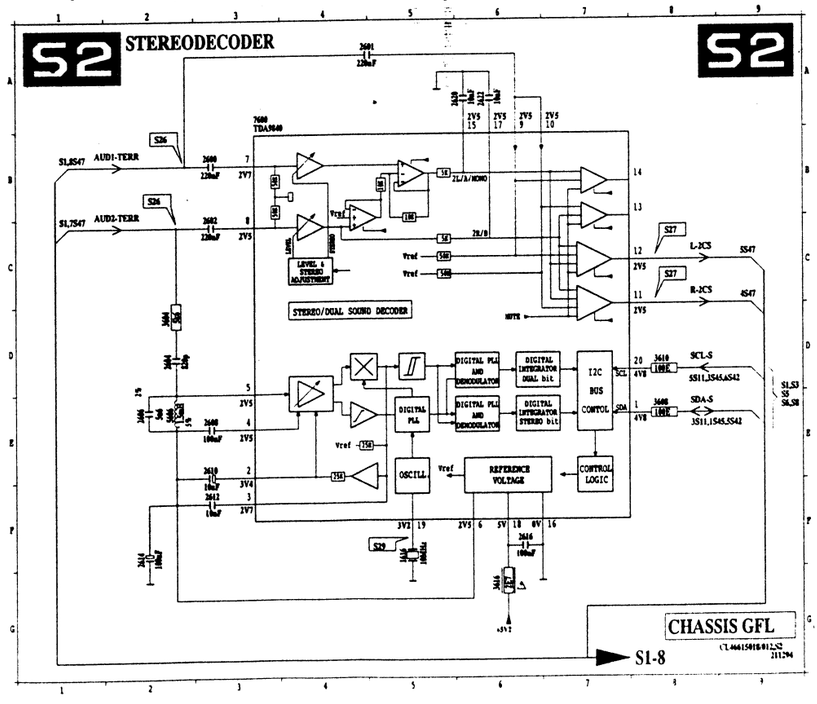


Small signal panel

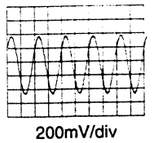


Tuner / Stereodecoder / Dekoder / Decodeur



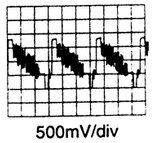


S26



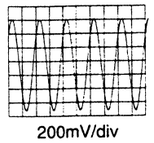
200mV/div
0.5ms/div

S21



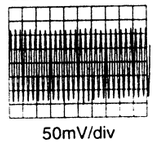
500mV/div
20µs/div

S27



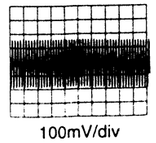
200mV/div
0.5ms/div

S22



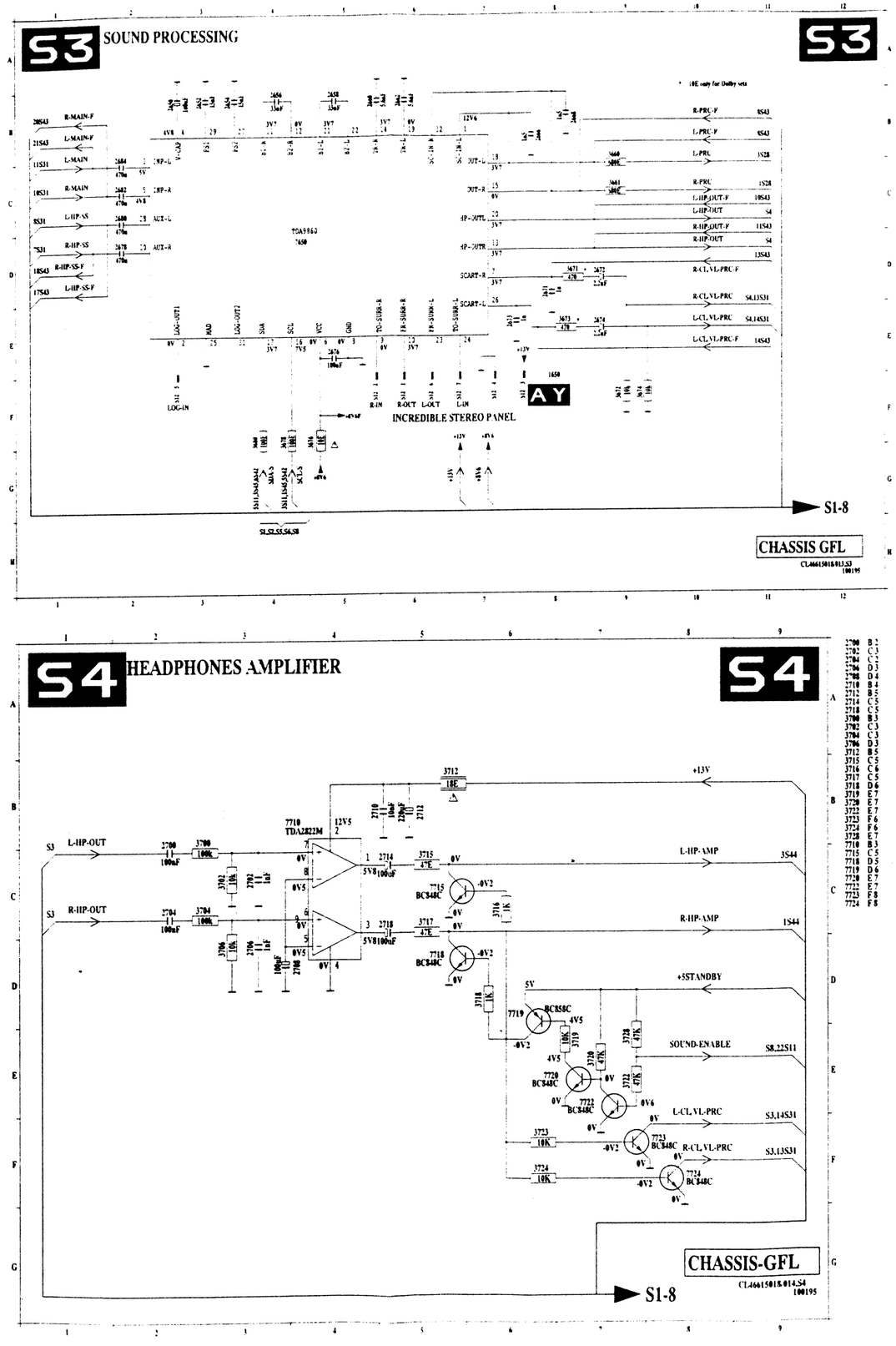
50mV/div
0.5µs/div

S29



100mV/div
0.5µs/div

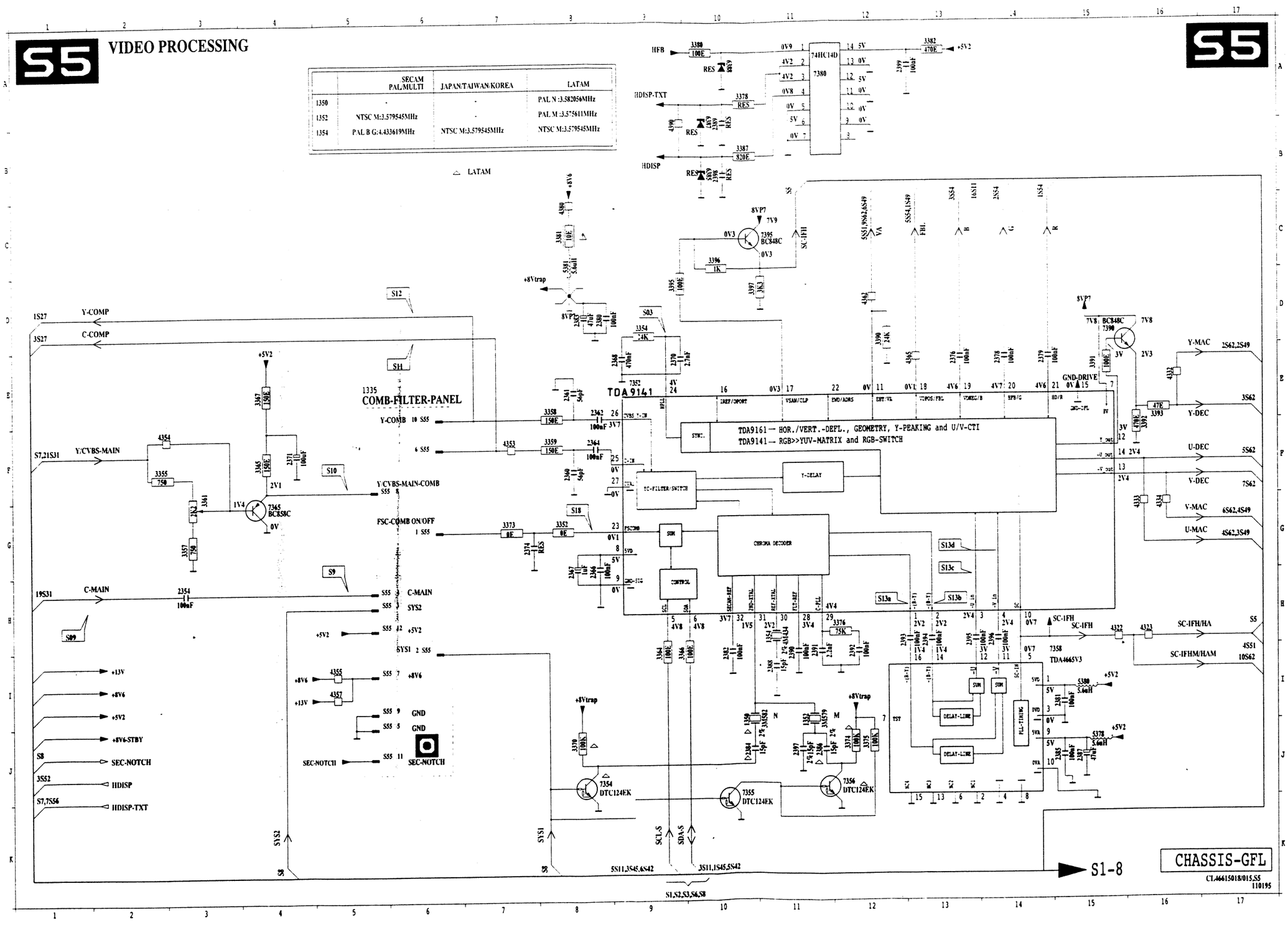
Sound processing / Tonsignal-Verarbeitung / Traitement audio

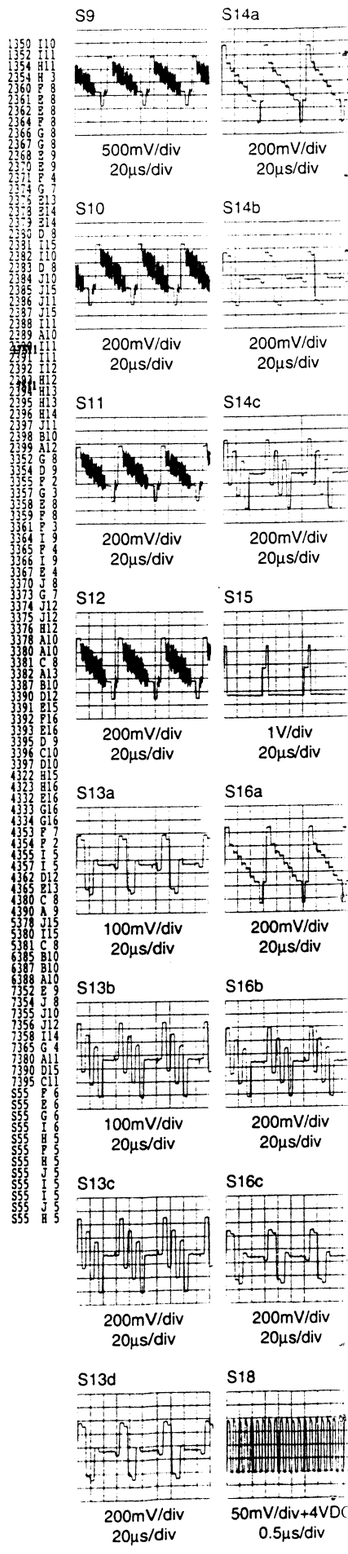


S5 VIDEO PROCESSING

	SECAM PAL/MULTI	JAPAN/TAIWAN/KOREA	LATAM
1350	-	-	PAL N:3.582056MHz
1352	NTSC M:3.579545MHz	-	PAL M:3.575611MHz
1354	PAL B G:4.433619MHz	NTSC M:3.579545MHz	NTSC M:3.579545MHz

△ LATAM

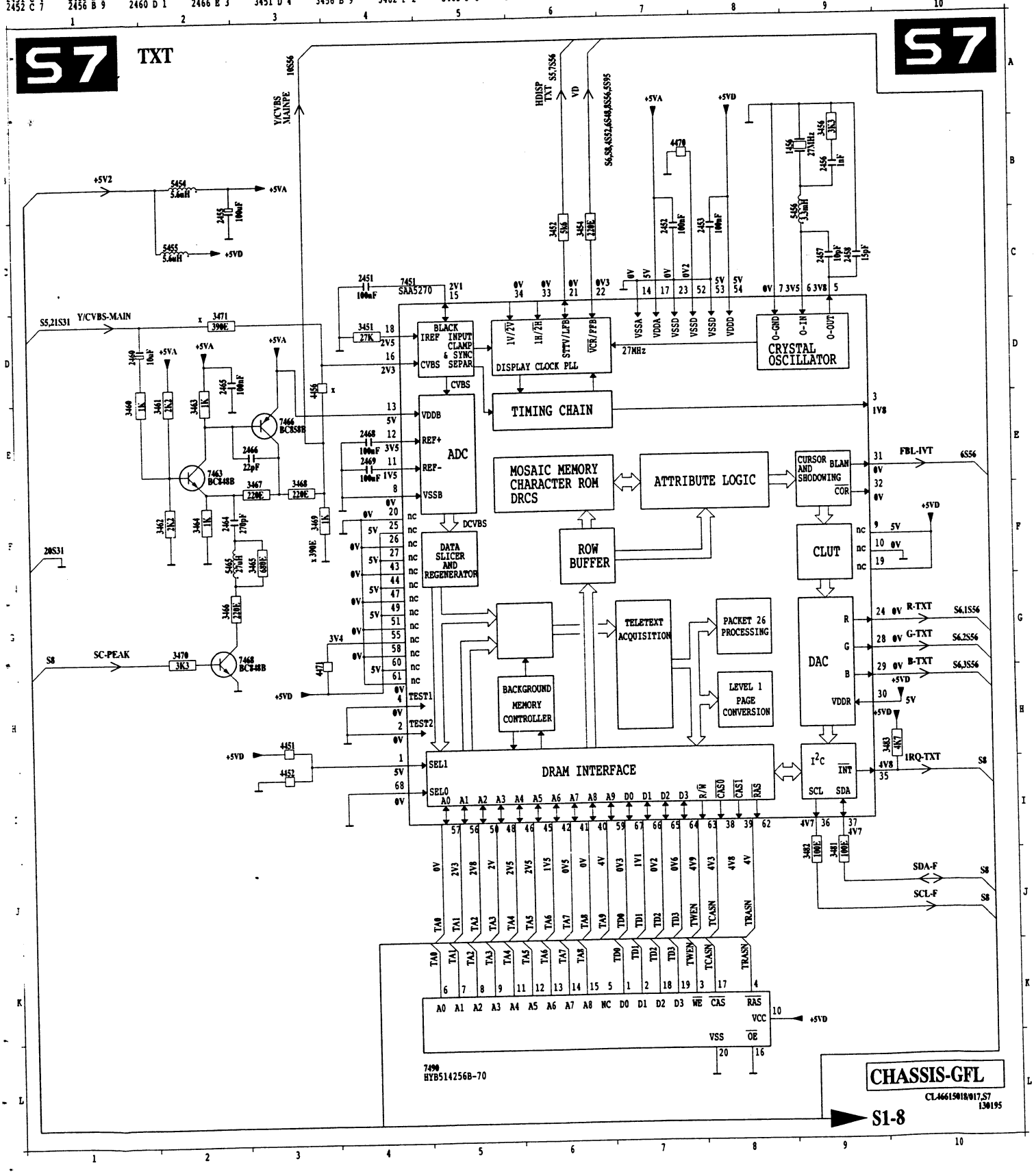




Teletext (SSP) / Videotext Dekoder (SSP) / Decodeur Teletexte (SSP)

1456 B 9 2453 C 8 2457 C 9 2464 F 2 2468 E 4 3452 C 6 3460 D 1 3463 D 2 3466 G 2 3469 F 3 3481 I 9 4451 H 3 4470 B 7 5455 C 2 7451 C 4 7468 G 2
2451 C 4 2455 B 2 2458 C 9 2465 D 2 2469 E 4 3454 C 6 3461 D 2 3464 F 2 3467 E 3 3470 G 2 3482 I 9 4452 I 3 4471 G 3 5456 B 9 7463 E 2 7490 L 4
2452 C 7 2456 B 9 2460 D 1 2466 E 3 3451 D 4 3456 B 9 3462 F 2 3465 F 3 3468 E 3 3471 D 2 3483 H10 4456 D 3 5454 B 2 5465 F 2 7466 E 3

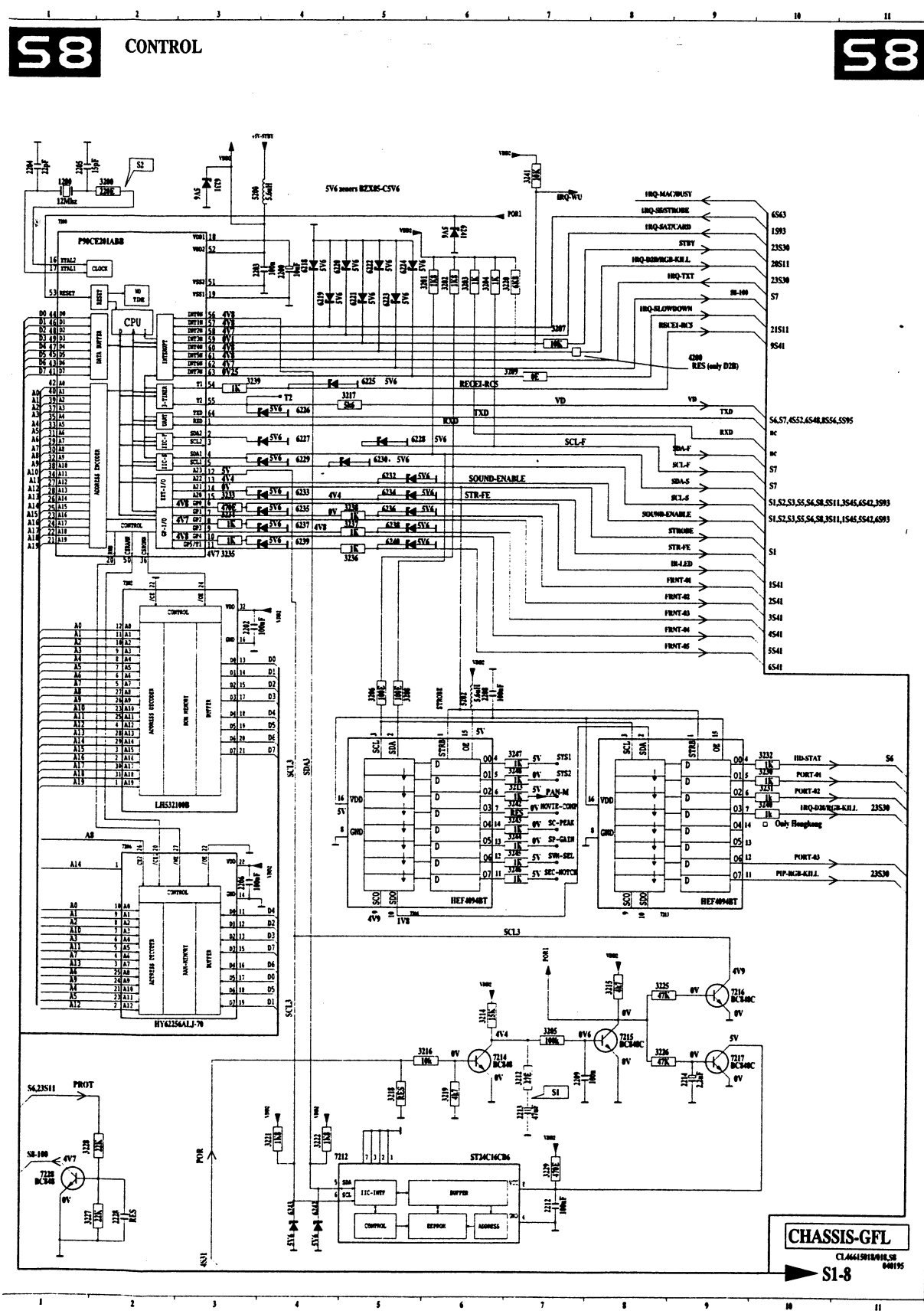
S7 TXT S7



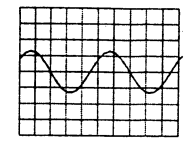
19A

:ontrol / Bedienung / Commande

S8 CONTROL

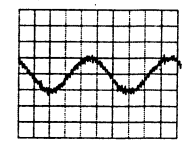


S30



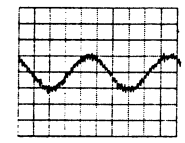
500mV/div
0.2ms/div

S31a



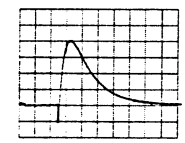
500mV/div
0.2ms/div

S31b



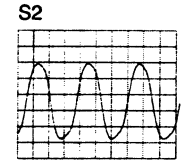
500mV/div
0.2ms/div

S1

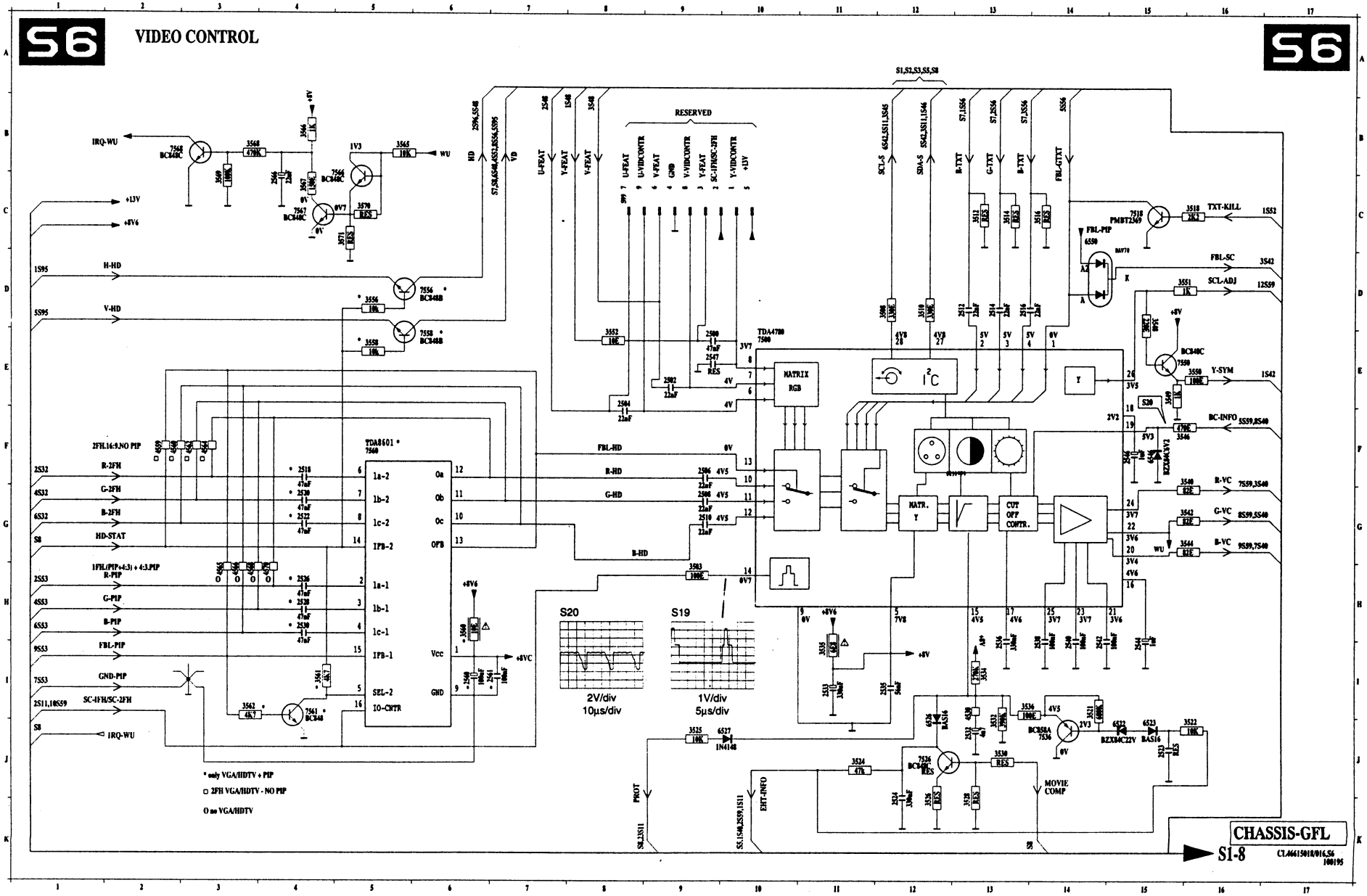


200mV/div
0.5s/div

S2

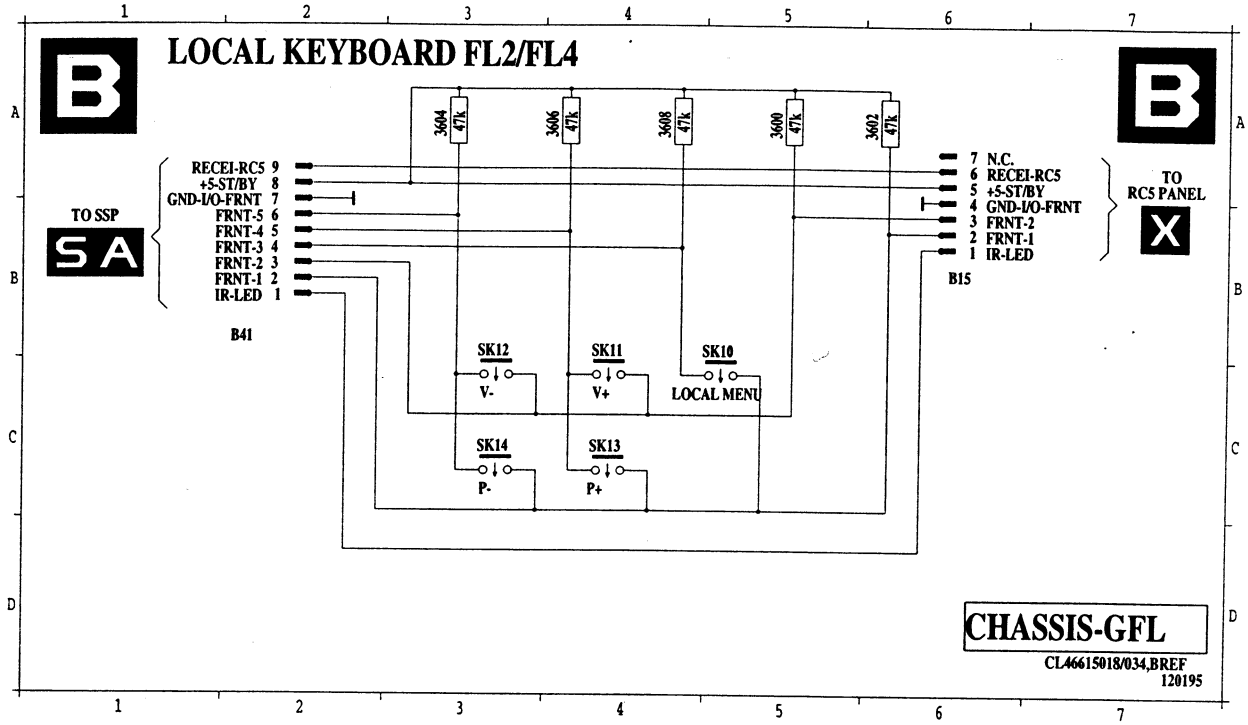


1V/div
0.2ms/div


S6
VIDEO CONTROL
S6
TDA8601 *
7560
TDA4780
7500
NATRIX
RGB
I²C
MATR.
Y
CUT
OFF
CONTR.
S20
S19
2V/div
10µs/div
1V/div
5µs/div
* only VGA/HDTV + PIP
□ 2FH VGA/HDTV - NO PIP
O no VGA/HDTV
CHASSIS-GFL
S1-8
CL46615018/016.S6
100195

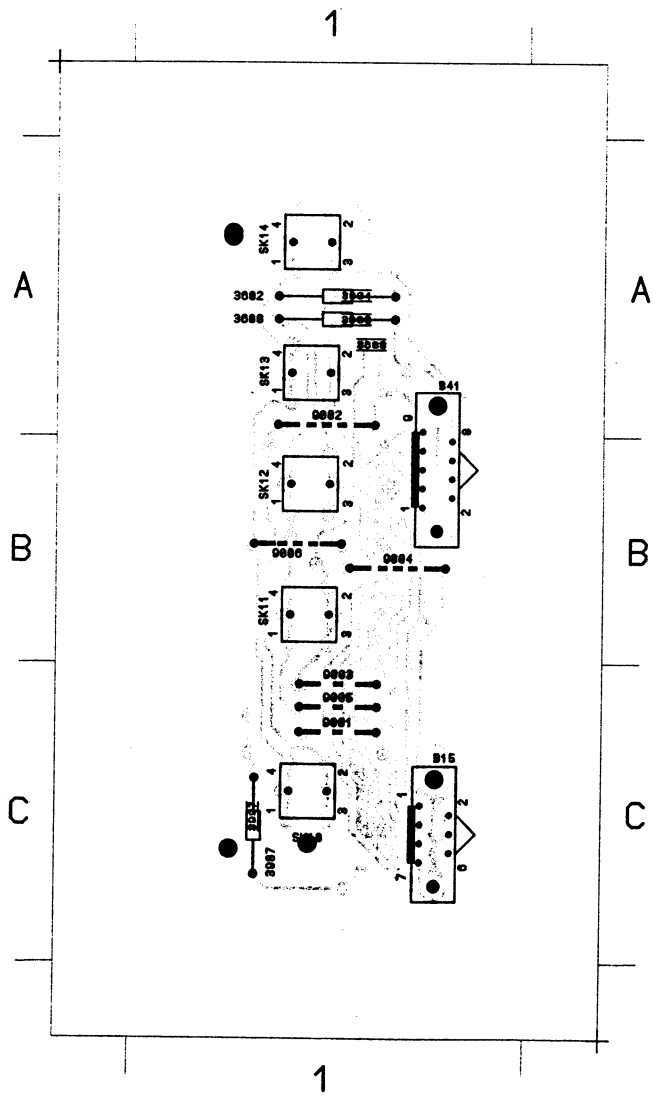
Keyboard panel / Keyboard Platte / Platine keyboard

3600 A 5 3604 A 3 3608 A 4 B41 B 2 SK11 B 4 SK13 C 4
3602 A 6 3606 A 4 B15 B 6 SK10 B 5 SK12 B 3 SK14 C 3



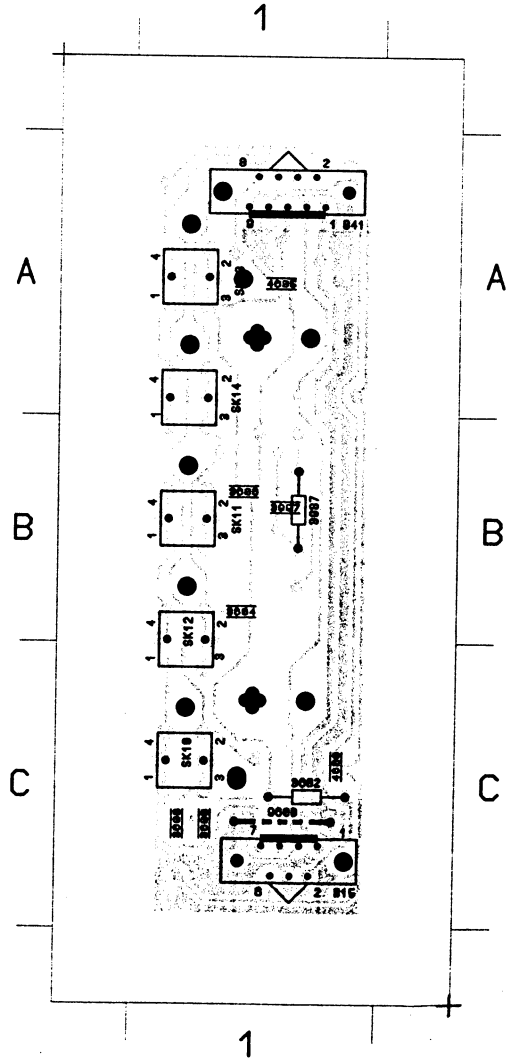
Keyboard FL2

3500 A 1 3505 A 1 3907 C 1 9003 C 1 9006 B 1 SK10 C 1 SK13 A 1
3502 A 1 3508 A 1 9001 C 1 9004 B 1 B15 C 1 SK11 B 1 SK14 A 1
3504 A 1 3987 C 1 9002 A 1 9005 C 1 B41 B 1 SK12 B 1

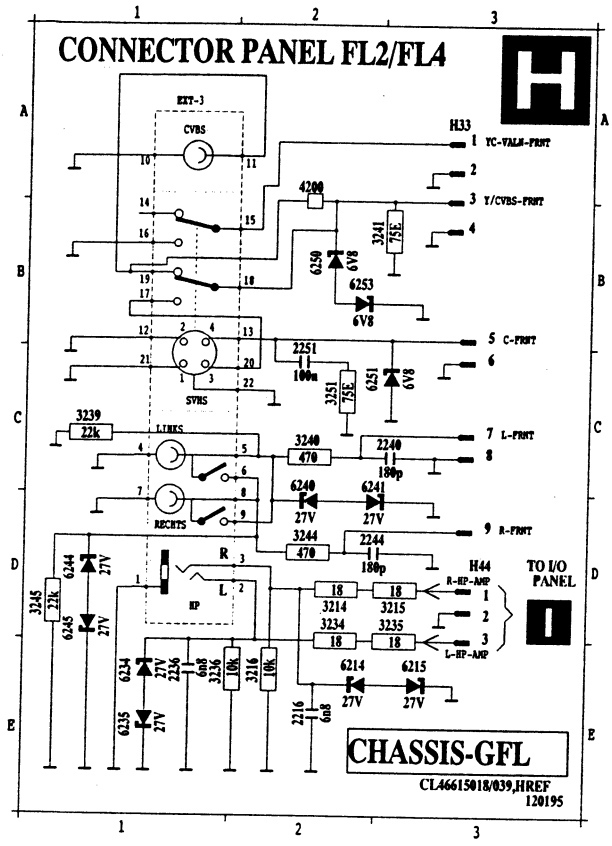


Keyboard FL4

3500 C 1 3508 C 1 4505 A 1 SK10 C 1 SK14 B 1
3502 C 1 3987 B 1 9500 C 1 SK11 B 1
3504 B 1 3907 B 1 B15 C 1 SK12 C 1
3505 B 1 4500 C 1 B41 A 1 SK13 A 1



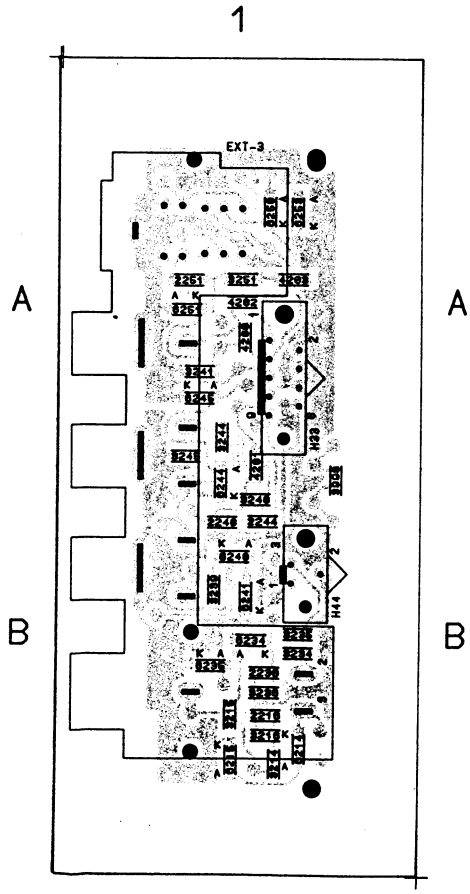
Connector panel / Connector Platte / Platine connector



2216 E 2
2236 E 1
2240 C 3
2244 D 2
2251 C 2
3214 D 2
3215 D 3
3216 E 2
3234 D 2
3235 D 3
3236 E 1
3239 C 1
3240 C 2
3241 B 2
3244 D 2
3245 D 1
3251 C 2
4200 A 2
6214 E 2
6215 E 3
6234 E 1
6235 E 1
6240 C 2
6241 C 2
6244 D 1
6245 D 1
6250 B 2
6251 C 2
6253 B 2
EXT-3A 1
H33 A 3
H44 E 3

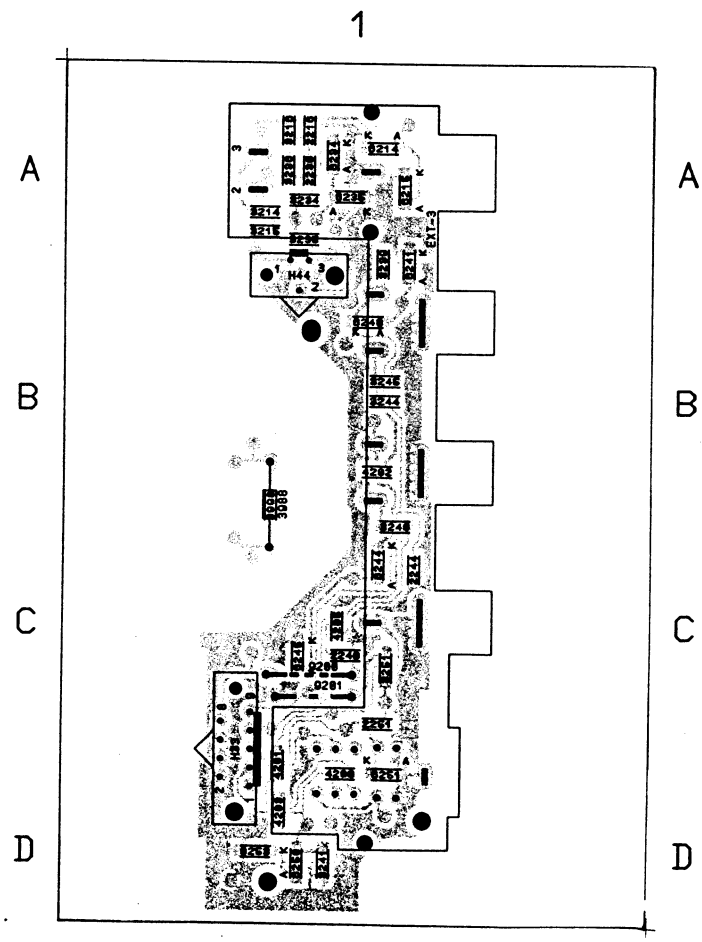
Connector panel FL4

2216 B 1	3235 B 1	4200 A 1	6241 B 1
2236 B 1	3236 B 1	4201 A 1	6244 B 1
2240 B 1	3239 B 1	4202 A 1	6245 A 1
2244 B 1	3240 B 1	4203 A 1	6250 A 1
2251 A 1	3241 A 1	6214 B 1	6251 A 1
3214 B 1	3244 A 1	6215 B 1	6253 A 1
3215 B 1	3245 A 1	6234 B 1	EXT-3 B 1
3216 B 1	3251 A 1	6235 B 1	H33 A 1
3234 B 1	3998 B 1	6240 B 1	H44 B 1

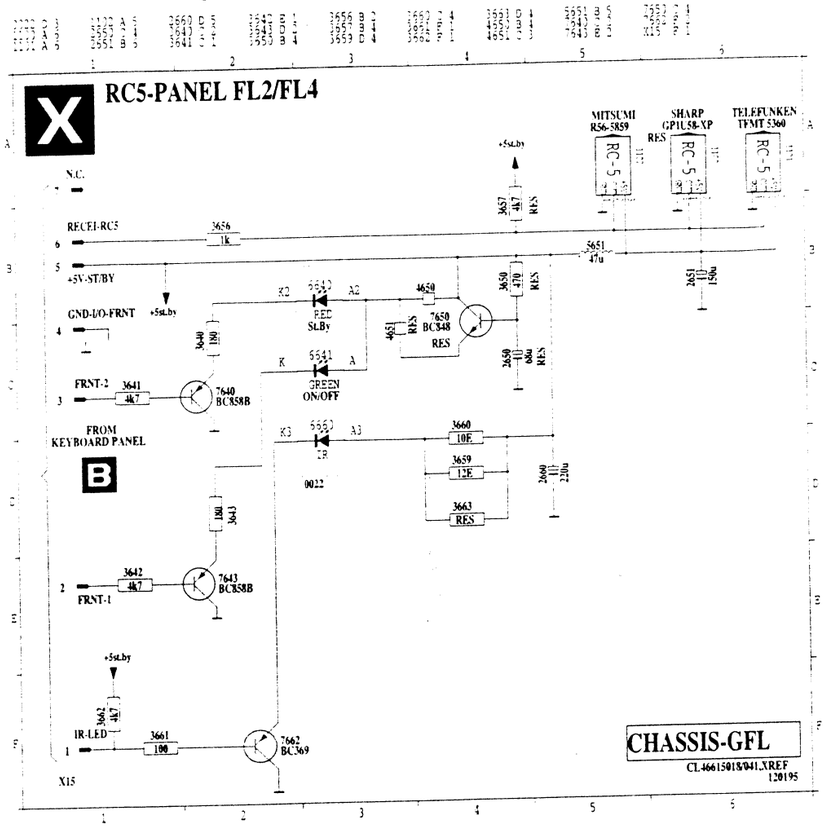


Connector panel FL2

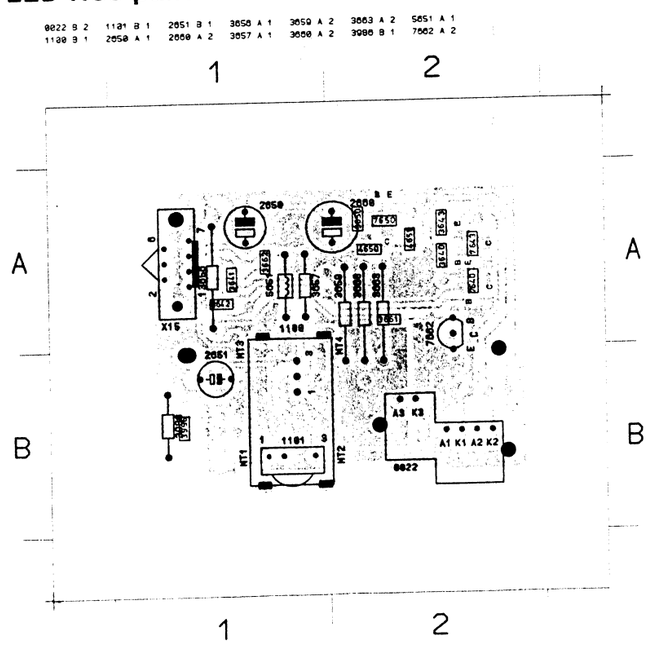
2216 A 1	3215 A 1	3240 C 1	3998 B 1	6214 A 1	6244 C 1	9201 C 1
2236 A 1	3216 A 1	3241 D 1	4200 D 1	6215 A 1	6245 C 1	EXT-3 A 1
2240 C 1	3234 A 1	3244 B 1	4201 D 1	6234 A 1	6250 D 1	H33 C 1
2244 C 1	3235 A 1	3245 B 1	4202 B 1	6235 A 1	6251 D 1	H44 A 1
2251 C 1	3236 A 1	3251 C 1	4203 D 1	6240 B 1	6253 D 1	
3214 A 1	3239 A 1	3988 B 1	4205 C 1	6241 A 1	9200 C 1	



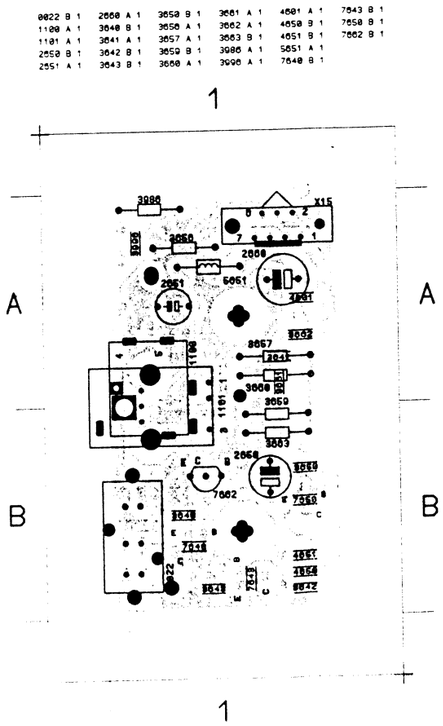
LED panel / LED Platte / Platine LED



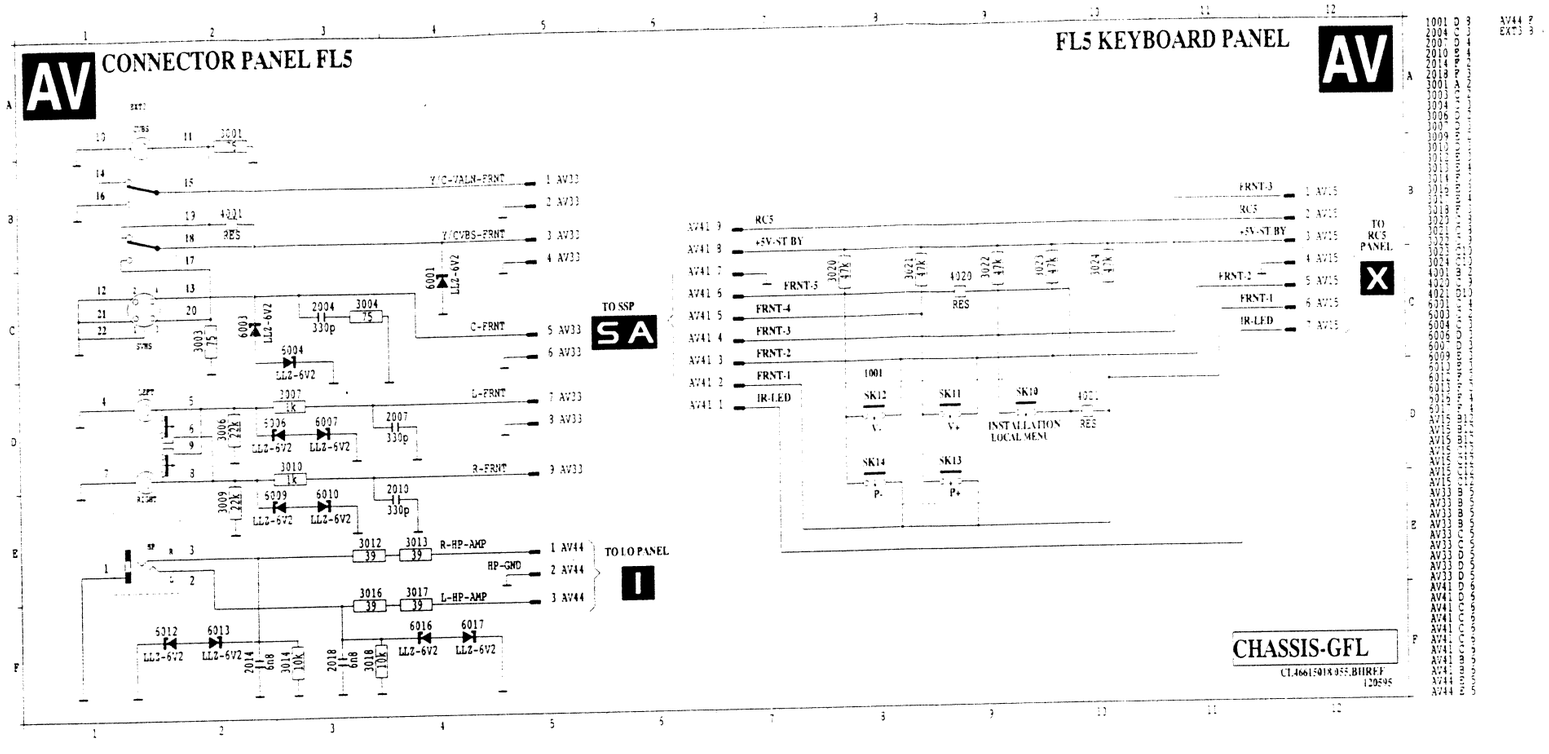
LED-RC5 panel FL2



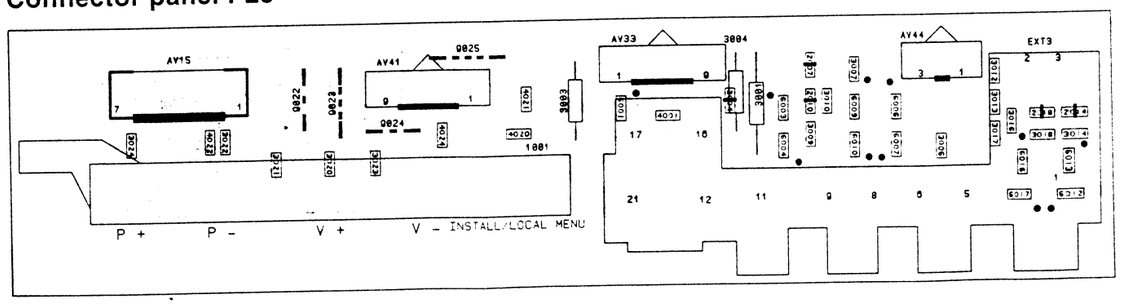
LED-RC5 panel FL4



Connector panel FL5 / Connector Platte FL5 / Platine connector FL5



Connector panel FL5



GLOBAL I/O PANEL

FROM FRONT DO

RESERVED

EXT4

EXT2

EXT3

EXT1

EXT4-ASP-RATIO

YC-VALN-EXT4

EXT1-ASP-RATIO

YC-VALN-EXT1

EXT3-FRNT-ASP-RATIO

YC-VALN-FRNT/EXT3

EXT2-ASP-RATIO

YC-VALN-EXT2

TEA6425

TEA6422

PCF8574P

I²C BUS CONTROL

INPUT FILTER

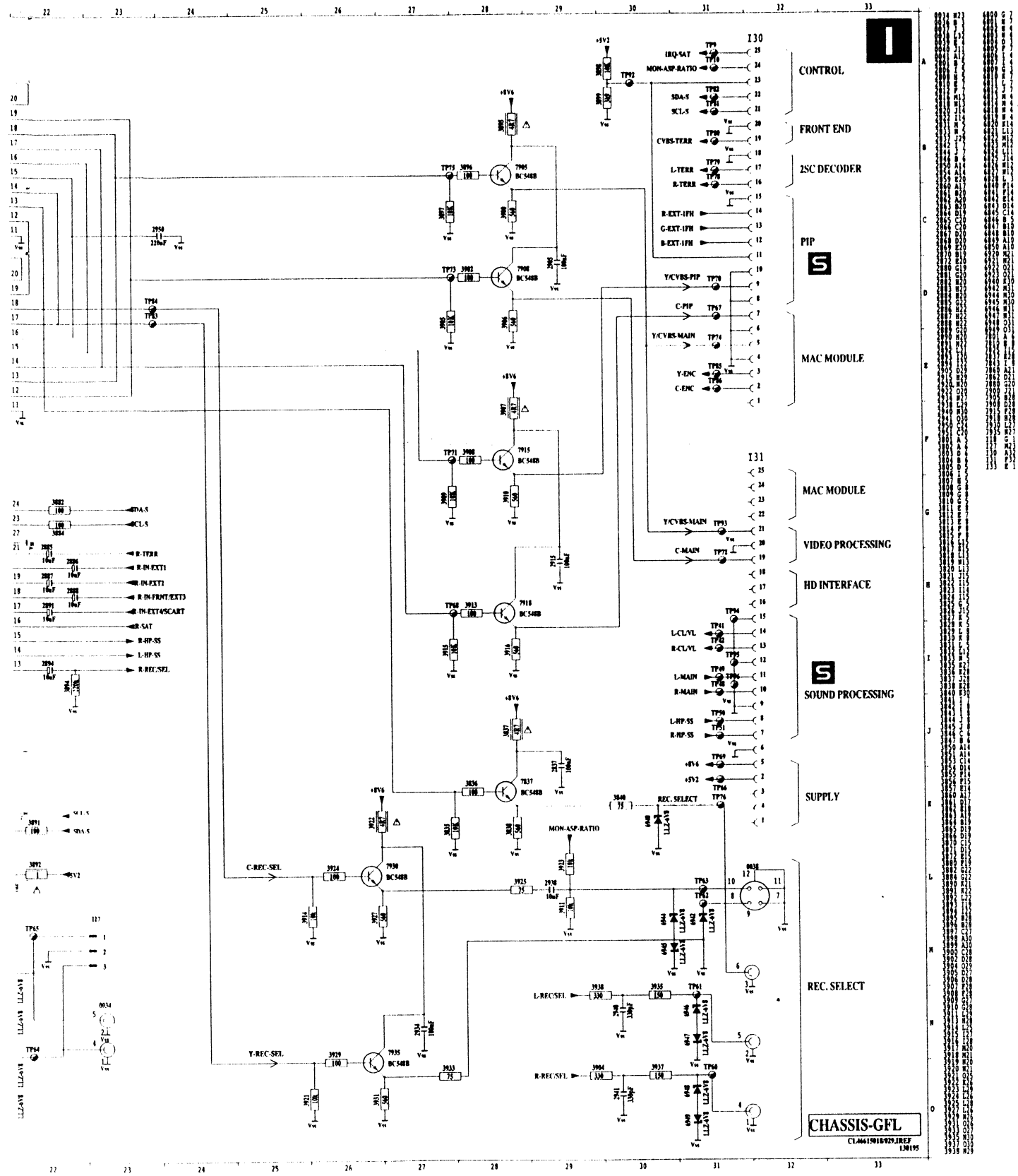
POR RESET

I/O PORTS

LP FILTER

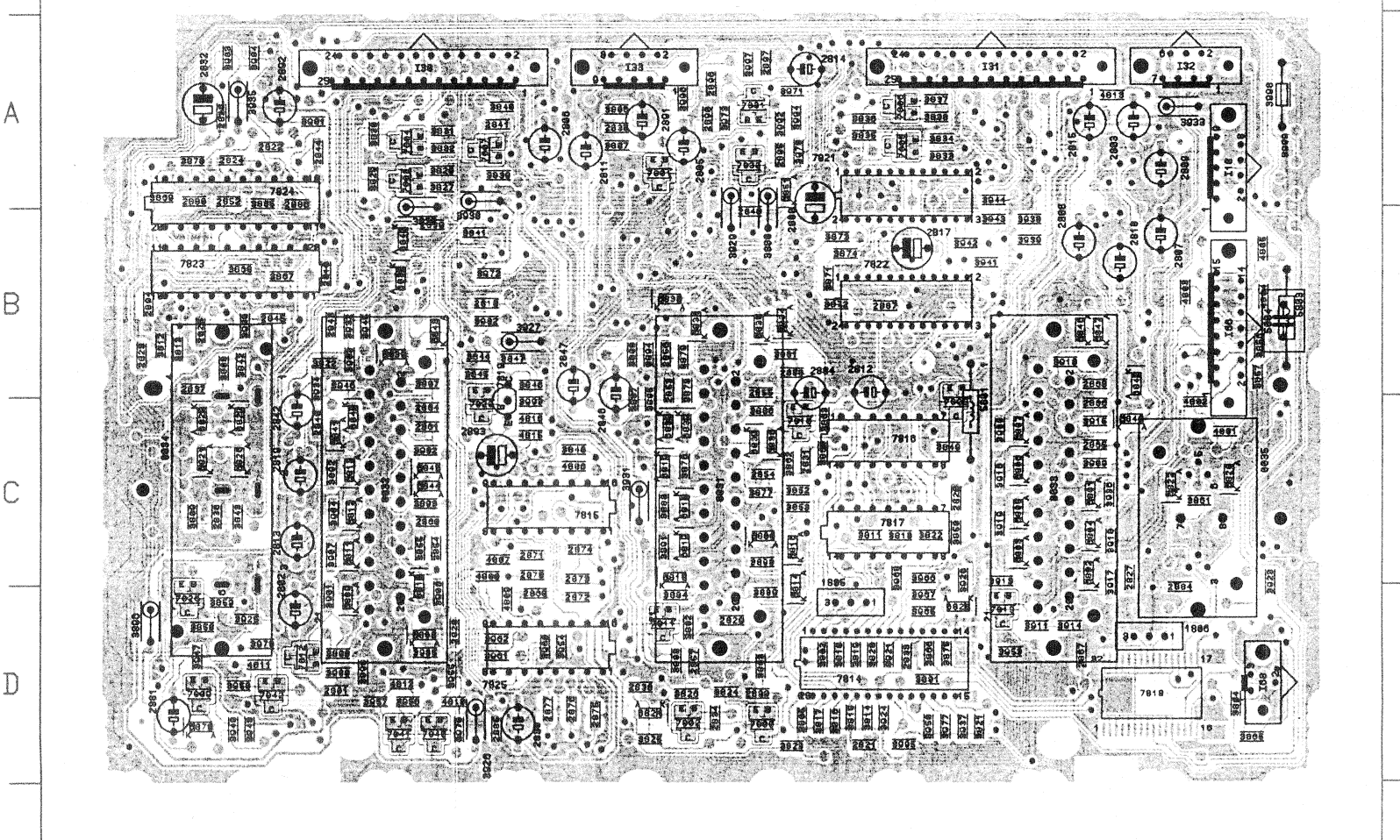
INTERRUPT LOGIC

Source selection CINCH / Signalquelle



23A

Source selection / Signalquellewahl



26 B

Sélection source CINCH

PCS 80 694

Sélection source

I 1

EURO AV2 I/O PANEL

I30

CONTROL: IRQ-SAT I2-32; IRQ-SS I2-31; IRQ-D2B I2-30; SDA-S; SCL-S

FRONT END: GND; IRQ-D2B I1-13; GND-TERR I1-12

2SC DECODER: L-TERR I2-43 I1-11; R-TERR I2-44 I1-10

PIP: R-EXT-1FH I1-9; G-EXT-1FH I1-8; B-EXT-1FH I1-7; FBL-EXT-1FH I1-6; GND-RGB-1FH; CVBS/Y-PIP I1-5; GND-PIP; C-PIP I1-4

MAC MODULE: GND-BB-MAC; BB-MAC I2-45; GND-TXT/SYNC-MAC; TXT/SYNC-MAC I1-3; Y-ENC I1-2; C-ENC I1-1

0031 SCART

R-OUT-SC1 I2-41 — 2846 10nF — 3880 330 — 3879 150 — 6834 27V — 6833 27V — V1

L-OUT-SC1 I2-42 — 2847 10nF — 3887 330 — 3878 150 — 6832 27V — 6831 27V — V2

3894 220k — 3895 220k — 330pF — 2851 — 330pF — 2850 — 330pF — 2858

6819 6V8 — V16 — 3877 150 — STATUS-SC1 — PR-SC1 — 3876 75 — 2854 330pF — GND-G-SC1 — V17

6800 6V8 — 6818 6V8 — V18 — 3875 75 — 2855 330pF — U/O-CNTR-BUS I2-49

G-SC1

GND-R/C

GND-FBL-SC1

R/C-IN/OUT-SC1

FBL-SC1

6817 6V8 — 6816 6V8 — V20 — V21

GND-CVBS-OUT-SC1

GND-Y/CVBS-IN

6815 6V8 — V22 — 6814 6V8 — V23

GND-SC1

3888 75

3889 75 — 3890 75 — 3891 150

Y/CVBS-OUT-SC1 I1-14 — 7811 BC548B — 3882 470 — 2857 220n — 3884 75 — 3885 10K — 3881 470

+8V6 — 3931 4K7

R-IN-SC1 — 3881 1K — I2-38

L-IN-SC1 — 3886 1K — I2-37

B/C-OUT-SC1 — I2-36

6834 27V — 6835 27V — V3 — 6836 27V — 6837 27V — V4

0032 SCART

R-TERR I1-10 — 2819 10nF — 3932 330 — 3945 150 — 6842 27V — 6841 27V — V7

L-TERR I1-11 — 2842 10nF — 3934 330 — 3946 150 — 6840 27V — 6839 27V — V6

3903 220k — 3932 220k — 330pF — 2843 — 330pF — 2848 — 330pF — 2864

R-IN-SC2 — 3897 1K — I2-35

L-IN-SC2 — 3902 1K — I2-34

B-SC2 — I2-33

6813 6V8 — V24 — V25 — 3893 150 — STATUS-SC2 — 2860 330pF — GND-G-SC2 — 3892 75 — 2861 330pF

G-SC2

GND-R/C

GND-FBL-SC2

6811 6V8 — V27 — 6810 6V8 — V28

R-SC2

EBL-SC2

GND-CVBS-OUT-SC2

GND-Y/CVBS-SC2-IN

6809 6V8 — V29 — V30

GND-SC2

3894 75

CVBS-IN-SC2

3895 75 — 3906 75 — 3907 75

CVBS-TERR I1-12 — 7812 BC548B — 3898 470 — 2801 220nF — 3901 75 — 3899 10K — 3900 470

+8V6 — 3896 4K7

7824 TEA6425

I2-39 BB-IN-DEC	1	IN1	VCC2 20
SDA-S 3869 100 res	2	SDA	OUT1 19
I2-40 VIDEO-SAT 2826 res 220nF	3	IN2	OUT2 18
SCL-S 3870 100 res	4	SCL	OUT3 17
I1-3 TXT/SYNC-MAC 2824 res 220nF	5	IN3	OUT4 16
res 2852 220nF	6	IN4	OUT5 15
I1-2 Y-ENC 2822 res 220nF	7	SUB	OUT6 14
+8FV-VID	8	IN5	OUT7 13
I1-1 C-ENC 2844 res 220nF	9	VCC1	OUT8 12
	10	IN6	GND 11

BB-OUT-DEC I2-56

Y/CVBS-OUT-SC1 I1-14

2V5

7823 TEA6417

R/C-IN/OUT-SC1 3981 47k 2816 220nF	3V3 1	IN1	IN7 20
SDA-S 3847 100	4V8 2	SDA	GND 19
SCL-S 3848 100 2829 220nF	3V3 3	IN2	OUT1 18 4V9
I2-29 C-FRNT 2845 220nF	4V8 4	SCL	OUT2 17 4V8
I2-27 Y/CVBS-FRNT 2825 220nF 7V5	2V5 5	IN3	OUT3 16 4V7
I2-28 CVBS-FRNT 2894 220nF 8V3	3V3 6	IN4	OUT4 15 4V8
I1-13 CVBS-TERR 3813 680 2823 220nF 2V5	7	SUB	OUT5 14 4V8
	8	IN5	OUT6 13 4V9
	9	VCC1	VCC2 12 8V3
		IN6	IN8 11 2V5

+8V-VID — 3935 4K7 — 3983 3K3 — 2822 — 3984 2K2 — 2826 — 2833 47nF — 2828 220nF — 3927 4K7

2993 47nF

4806 — 4807 — 4808 — 4809 — 4815 0R — 4816 0R — res

TDA8660/C1 7815

R/C-IN OUT-SC1	2874 220nF 1V3	1a-1	Oa 12 1V3
G-SC1	2873 220nF 1V3	1b-1	Ob 11 1V3
B/C-OUT-SC1	2872 220nF 1V3	1c-1	Oc 10 1V3
FBL-SC1	0V 15	IPB-1	OPB 13 0V1
R-SC2	2869 220nF 1V3	1a-2	
G-SC2	2870 220nF 1V3	1b-2	
B-SC2	2871 220nF 1V3	1c-2	
FBL-SC2	0V 14	IPB-2	Vcc 1
I2-26 RGB-SEL-SC2	0V 5	SEL-2	GND 9
I2-25 RGB-SC1-SC2-KILL	0V 16	IO-CNTR	

+8V6 — 3926 4K7 — 8V2 — 10nF — 2830 — 3885 220n — 0V

TDA8601/C1 7825

I2-24 R-2FH	2875 res 220nF	1a-1	Oa 12
I2-23 G-2FH	2876 res 220nF	1b-1	Ob 11
I2-22 B-2FH	2877 res 220nF	1c-1	Oc 10
I2-21 H-SC3	15	IPB-1	OPB 13
	n.c. 6	1a-2	
	n.c. 7	1b-2	
	n.c. 8	1c-2	
	n.c. 14	IPB-2	Vcc 1
	5	SEL-2	GND 9
I2-20 RGB-SC3-KILL	16	IO-CNTR	

+8V6 — 3836 100 — 7806 BC548B — 3838 10K — 3837 560 — Y/CVBS-MAIN I2-48

3835 2K2 — 7805 BC548B — 3840 220n — 3833 1K — 3834 560 — C-MAIN I2-47

3829 2K2 — 7803 BC548B — 3827 1K — 3828 560 — C-PIP I1-4

3830 2K2 — 7804 BC548B — 3839 220n — 3832 2K2 — 3831 560 — CVBS-Y-PIP I1-5

BC558B 7819 — BC548B 7820 — 3993 150E — 3445 560 — 3444 2K2 — 3446 560 — 3982 1K8 — 3447 220nF — 2818

+8V6 — 3978 RES — 7840 RES — 4810 0R — 3960 1K — 3955 RES — R-EXT-1FH I1-9

+8V6 — 3956 RES — 7841 RES — 4812 0R — 3961 1K — 3957 RES — G-EXT-1FH I1-8

+8V6 — 3979 RES — 7842 RES — 4811 0R — 3962 1K — 3958 RES — B-EXT-1FH I1-7

3954 1K — FBL-EXT-1FH I1-6

I2-46

CHASSIS-GFL

CL46615018/022.11 180195

I2

I 1

I2 EURO AV2 I/O PANEL

I2

I31

MAC MODULE: NC, GND-LR-MAC, L-MAC (I2-1), R-MAC (I2-2), I1-48

VIDEO PROCESSING: GND-YC-MAIN, I1-47

HD INTERFACE: GND-HV-HD, H-HD (I2-3), Y-HD (I2-4), GND-LR-PRC

SOUND PROCESSING: GND-LR-MAIN, L-MAIN (I2-5), R-MAIN (I2-6), GND-HP-SS, L-HP-SSS (I2-7), R-HP-SS (I2-8)

SUPPLY: GND, +8V6 POR (I2-9), +5V2, +5V-STBY

I18 (FROM SATELLITE MODULE): IRQ-SAT (I1-32), SCL-S, SDA-S, GND-VIDEO-SAT, VIDEO-SAT (I1-40), GND-VIDEO-SAT, R-SAT (I2-10), GND-LR-SAT, L-SAT (I2-11)

+8V6, +8V-AUD

7822 TEA6430: GND, REF, VCC, SDA, SCL, SUB, L1-I, L2-I, L3-I, L4-I, L5-I, LI-O, R1-O, R2-O, R1-I, R2-I, R3-I, R4-I, R5-I, LI-I, L2-I, L3-I, L4-I, L5-I, R1-I, R2-I, R3-I, R4-I, SUB, SCL, SDA, R1-O, L4-O, R3-O, L2-O, R4-O, L5-O

SDA-S, SCL-S

L-IN-SC1 (I1-37), L-IN-SC2 (I1-34), L-FRNT (I2-14), L-IN-SC3 (I2-54), L-TERR (I1-44), L-MAIN (I2-5), R-MAIN (I2-6), L-OUT-SC1 (I1-42), R-OUT-SC1 (I1-41)

R-IN-SC1 (I1-38), R-IN-SC2 (I1-35), R-FRNT (I2-15), R-IN-SC3 (I2-16), R-TERR (I1-43), R-HP-SS (I2-8), L-HP-SS (I2-7)

7821 TEA6430 (RES): REF, L3-O, R3-O, L4-O, R4-O, R5-I, R4-I, R3-I, R2-I, R1-I, SUB, SCL, SDA, L5-I, L4-I, L3-I, L2-I, L1-I, VCC, REF, GND, R2-O, L2-O, R1-O, L1-O, L5-O, L4-O, L3-O, R1-I

R-MAX (I2-2), R-SAT (I2-10), L-MAC (I2-2), L-SAT (I2-11)

MSN6307GS-VK 7818: D5, D6, D7, NC, R/WN, A/DN, I2C, DSN, INTN, A0, A1, A2, NC, SDA, SCL, GND, D4, D3, D2, D1, MC, D0, PORN, 6NCI, 6NCO, BUSIN, BUSOUT, TESTN, DBP, DBN, NC, VDD

+5V2, PORIN, IRQ-D2B (I1-30), 0035 DTB-CONNECTOR, 1806 CST6.00MGW, I68 To internal HDMAC decoder

STBY, +5V-STBY, 7800 BC848B, POR (I2-9)

7817 LM339: STATUS-SC1 (I2-36), STATUS-SC2 (I1-33), STATUS-DEC (I2-51), FBL-EXT-1FH (I1-46), Y-HD (I2-53), FRNT-ASP-RATIO (I2-13), SCL-S, SDA-S

R53 16:9+4:3-SC1, R72 4:3-SC1, R71 16:9+4:3-SC2, R70 4:3-SC2, R51 SCL, R52 SDA, R43 YC-VALN-FRNT, R92 4:3-SC3, R91 4:3-SC3, R90 FBL-VALN-SC1, R83 HD-ACTIVE, R81, HKEO FRNT-ASP-RATIO Xin Xout R62

7814 TMP47C2033N: RSTN Vdd, P8-SC1, IRQ-SS (R82), IRQ-S5 (I1-32), STC-Y, RGB-SC3-KILL (R61), RGB-SC1-SC2-KILL (R41), RGB-SEL-SC2 (R42), ESI-OUT (R63), ESI-IN (R80), U/D-IN (R60), U/D-OUT (R40), U/D-CNTR-BUS (I1-49)

7809 BC858B, 7826 BC848B, 7802 BC848C, 7801 BC848C, CST4.00MGW

I33 FROM FRONT I/O: GND, YC-VALN-FRNT (I2-12), Y/CVBS-FRNT (I2-55), C-FRNT (I1-27), FRNT-ASP-RATIO (I2-13), L-FRNT (I2-14), CVBS-FRNT (I1-28), R-FRNT (I2-15), Y/CVBS-FRNT (I2-55)

7830 BC858B, 7831 BC848B, 7813 BC848B, BB-SC3-OUT (I2-52)

SOUND PROCESSING: I4I31, I3I31, ESI (I2-50), GND-ESI

0033 SCART: GND-LR-SC3, GND-B-SC3, GND-G-SC3, GND-R/C, GND-FBL-SC3, GND-CVBS-OUT-SC3, GND-BB-SC3-IN, GND-SC3

R-IN-SC3 (I2-16), L-IN-SC3 (I2-54), STATUS-SC3, Y-SC3, H-SC3, BB-SC3-IN, BB-SC3-OUT (I2-52)

I66 FROM INTERNAL HDMAC DECODER: GND-BB-SC3-OUT, GND-BB-IN-DEC, BB-IN-DEC, GND-BB-OUT-DEC

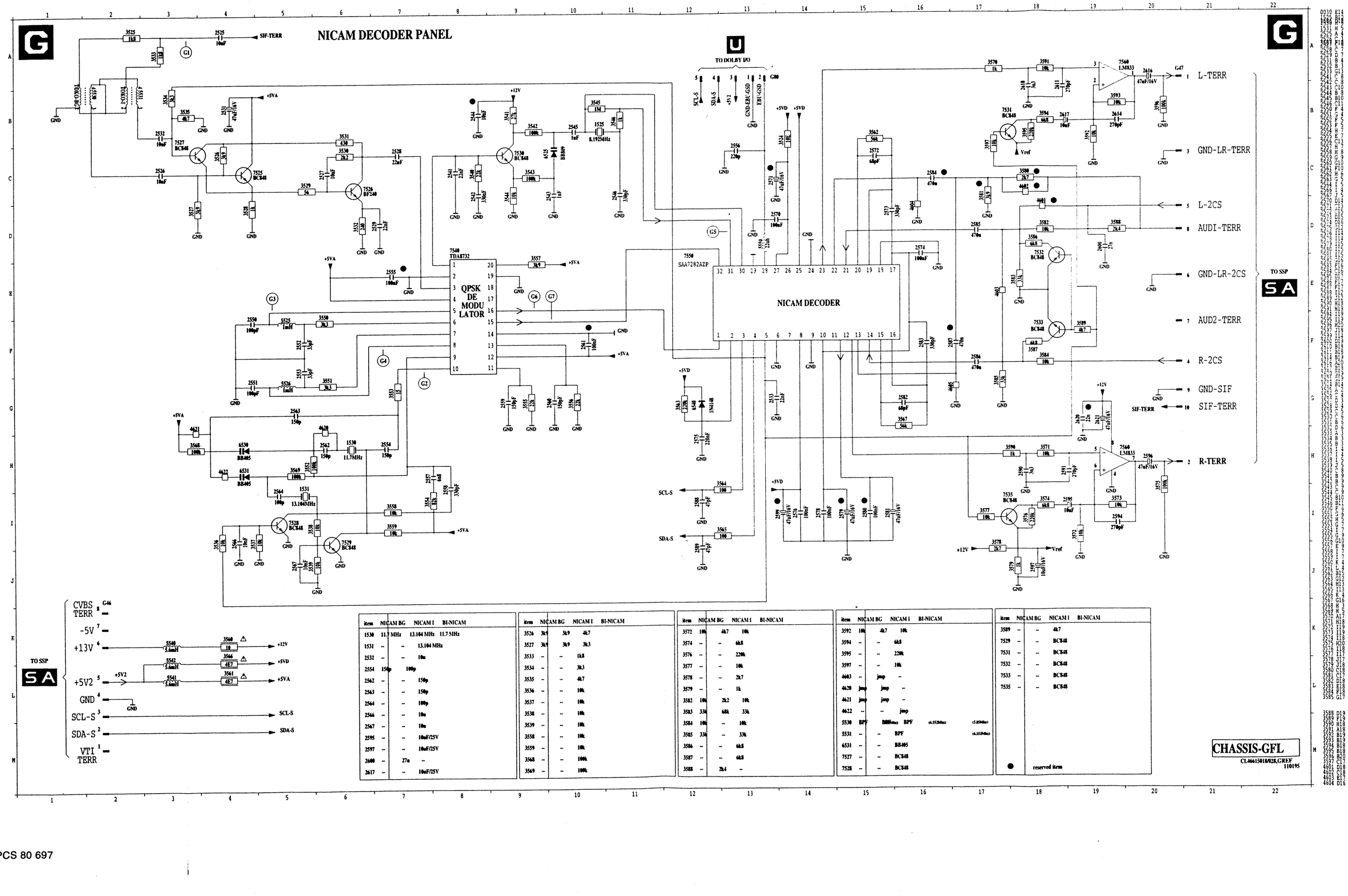
I32 TO VIDEO CONTROL: GND, GND-B-2FH, GND-G-2FH, GND-R-2FH; B-2FH, G-2FH, R-2FH, BB-VLC

CHASSIS-GFL CL46650I8/023.22 180195

I1

NICAM decoder / NICAM-Dekoder / Decodeur NICAM

NICAM DECODER PANEL



item	NICAM BG	NICAM I	BI-NICAM
1530	11.7 MHz	13.104 MHz	11.7 MHz
1531	–	–	13.104 MHz
2532	–	–	10n
2554	150p	100p	
2562	–	–	150p
2563	–	–	150p
2564	–	–	100p
2566	–	–	10n
2567	–	–	10n
2595	–	–	10uF/25V
2597	–	–	10uF/25V
2600	–	27n	–
2617	–	–	10uF/25V

item	NICAM BG	NICAM I	BI-NICAM
3526	3k9	3k9	4k7
3527	3k9	3k9	3k3
3533	–	–	1k8
3534	–	–	3k3
3535	–	–	4k7
3536	–	–	10k
3537	–	–	10k
3538	–	–	10k
3539	–	–	10k
3558	–	–	10k
3559	–	–	10k
3568	–	–	100k
3569	–	–	100k

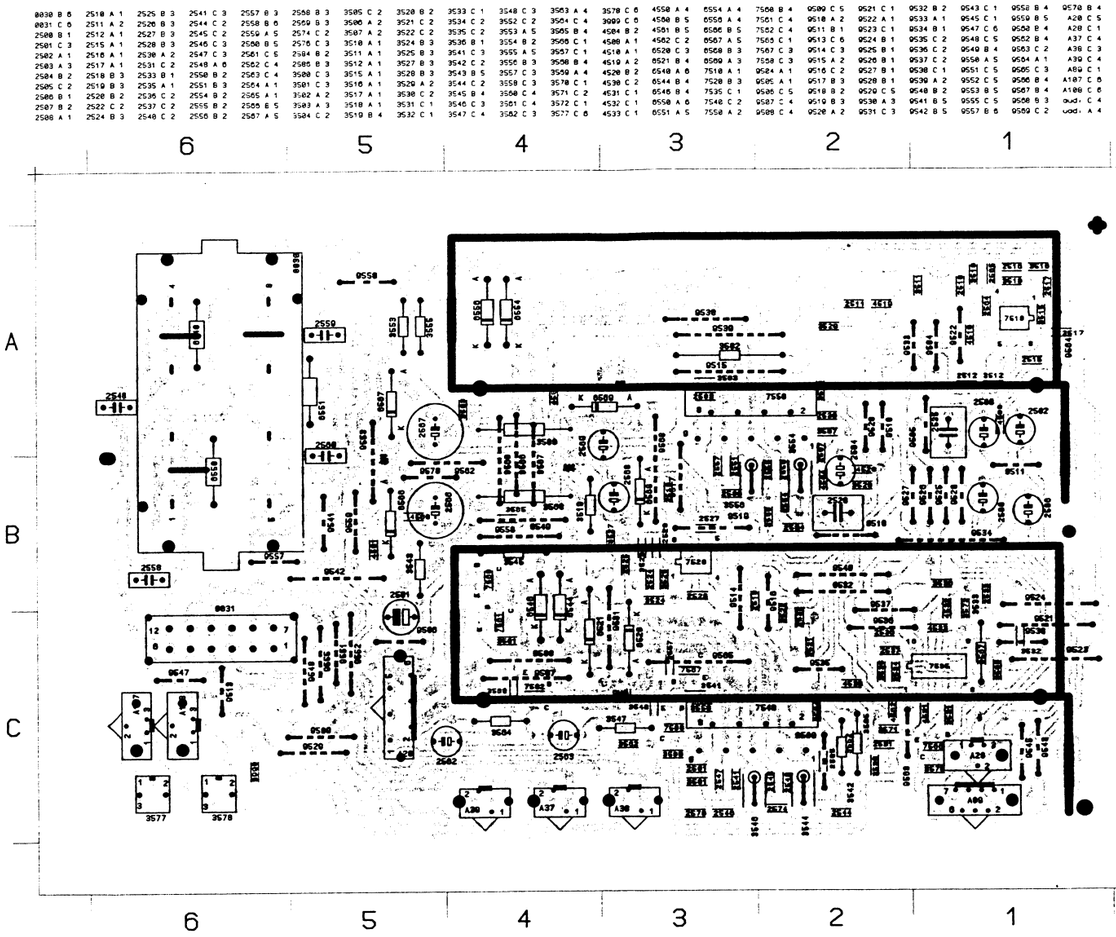
item	NICAM BG	NICAM I	BI-NICAM
3572	10k	4k7	10k
3574	–	–	6k8
3576	–	–	220k
3577	–	–	10k
3578	–	–	2k7
3579	–	–	1k
3582	10k	2k2	10k
3583	33k	68k	33k
3584	10k	–	10k
3585	33k	–	33k
3586	–	–	6k8
3587	–	–	6k8
3588	–	2k4	–

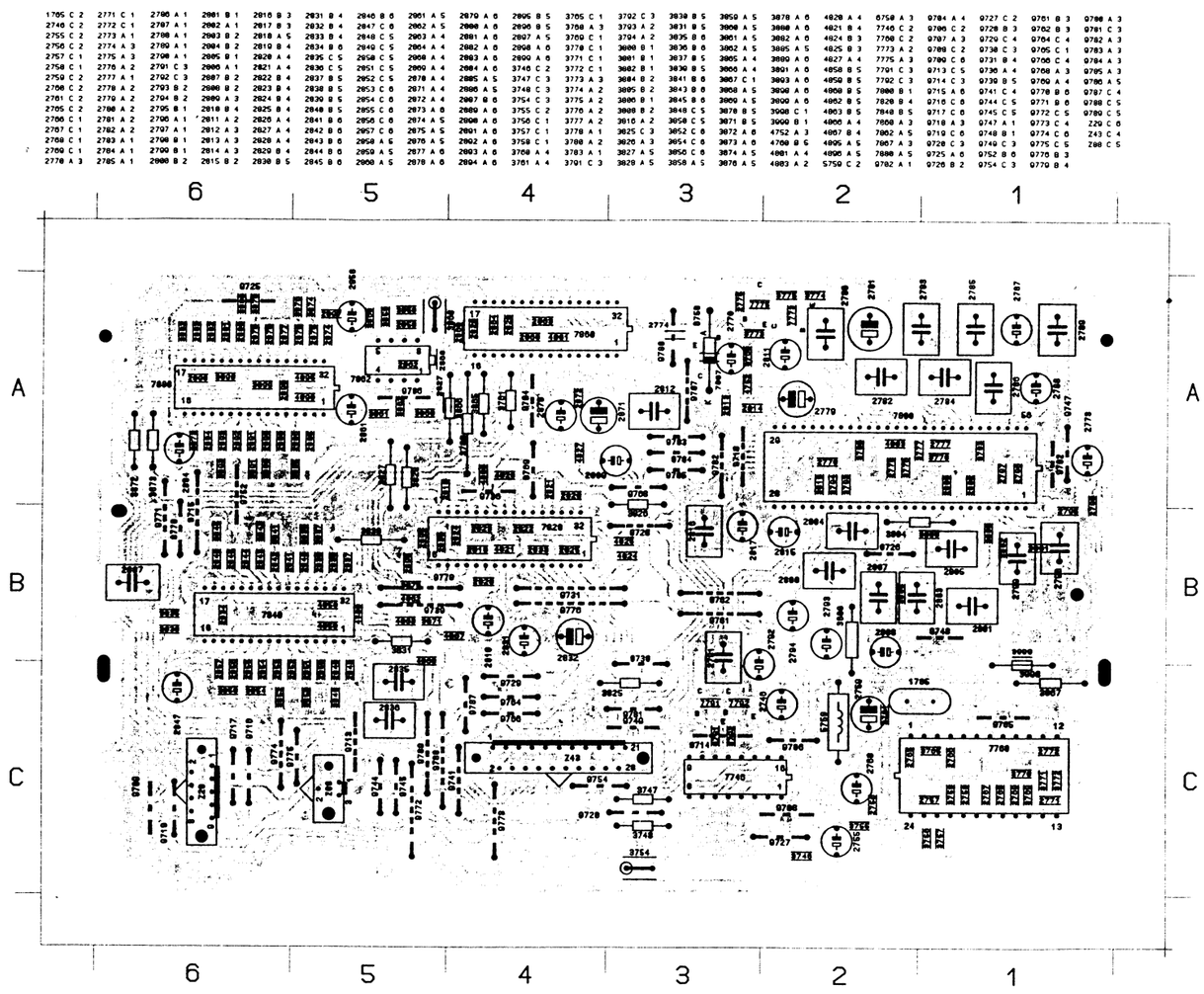
item	NICAM BG	NICAM I	BI-NICAM
3592	10k	4k7	10k
3594	–	–	6k8
3595	–	–	220k
3597	–	–	10k
4663	–	jmp	–
4620	jmp	jmp	–
4621	jmp	jmp	–
4622	–	–	jmp
5530	BPF	BPF (6.552Mhz)	BPF (5.850Mhz)
5531	–	BPF	(6.552Mhz)
6531	–	–	BB405
7527	–	–	BC848
7528	–	–	BC848

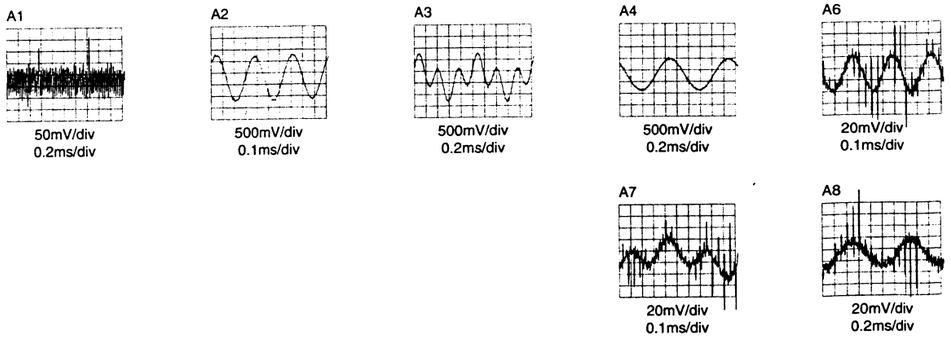
item	NICAM BG	NICAM I	BI-NICAM
3589	–	–	4k7
7529	–	–	BC848
7531	–	–	BC848
7532	–	–	BC848
7533	–	–	BC848
7535	–	–	BC848
●	reserved item		

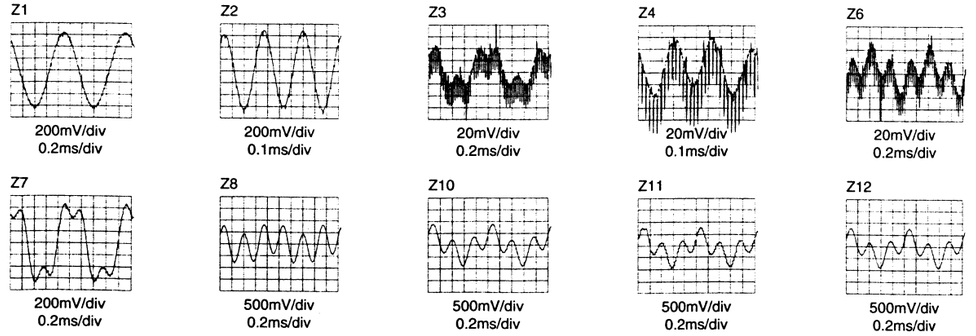
CHASSIS-GFL
CL46615018/028.GREF
110195

Audio power amplifier / Tonsignal-Endverstärker









AUDIO FEATURING UNIT

243

FROM SSP

SA

ONLY FOR DOLBY SETS

DOLBY LO PANEL

Z13

200mV/div
0.2ms/div

Z14

20mV/div
0.2ms/div

DELAY LINE

DOLBY SURROUND DECODER

I²C INTERFACE

AUDIO CONTROL
LEFT & RIGHT

EQUALIZER
LEFT & RIGHT

229

TO DOLBY I/O

U

AUDIO CONTROL
CENTER & SURROUND

EQUALIZER
CENTER & SURROUND

Z15

20mV/div
0.2ms/div

Z17

20mV/div
0.2ms/div

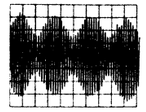
Z19

20mV/div
0.2ms/div

CHASSIS-GFL

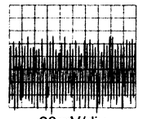
NICAM panel

G1



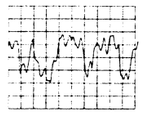
50mV/div
0.5µs/div

G2



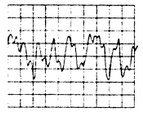
20mV/div
0.5µs/div

G3



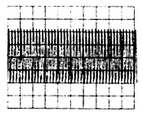
200mV/div
5µs/div

G4



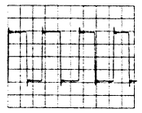
200mV/div
5µs/div

G5



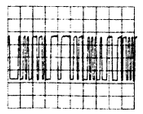
1V/div
0.5µs/div

G6



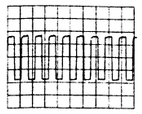
1V/div
0.5µs/div

G7



1V/div
10µs/div

G7data1



1V/div
10µs/div

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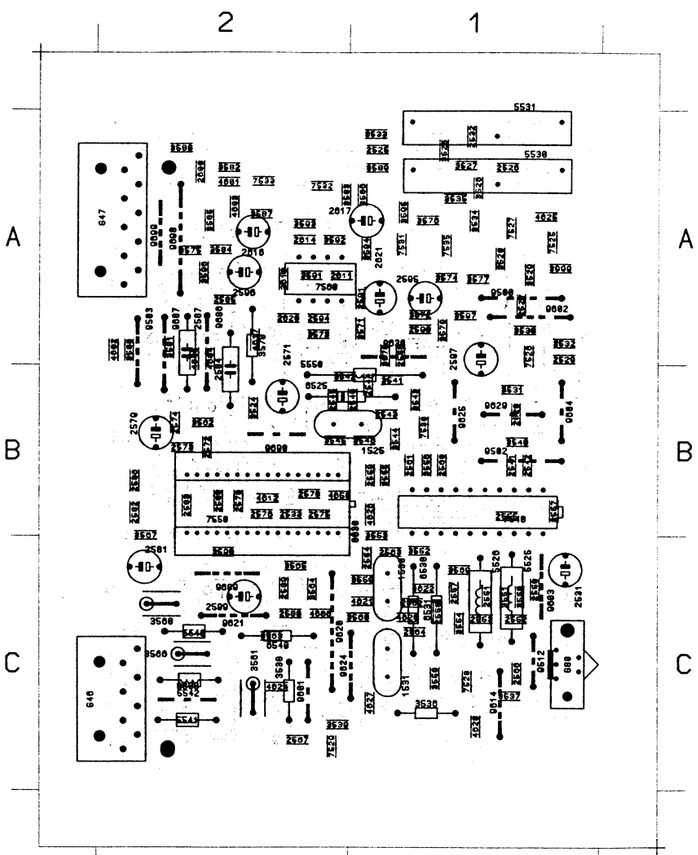

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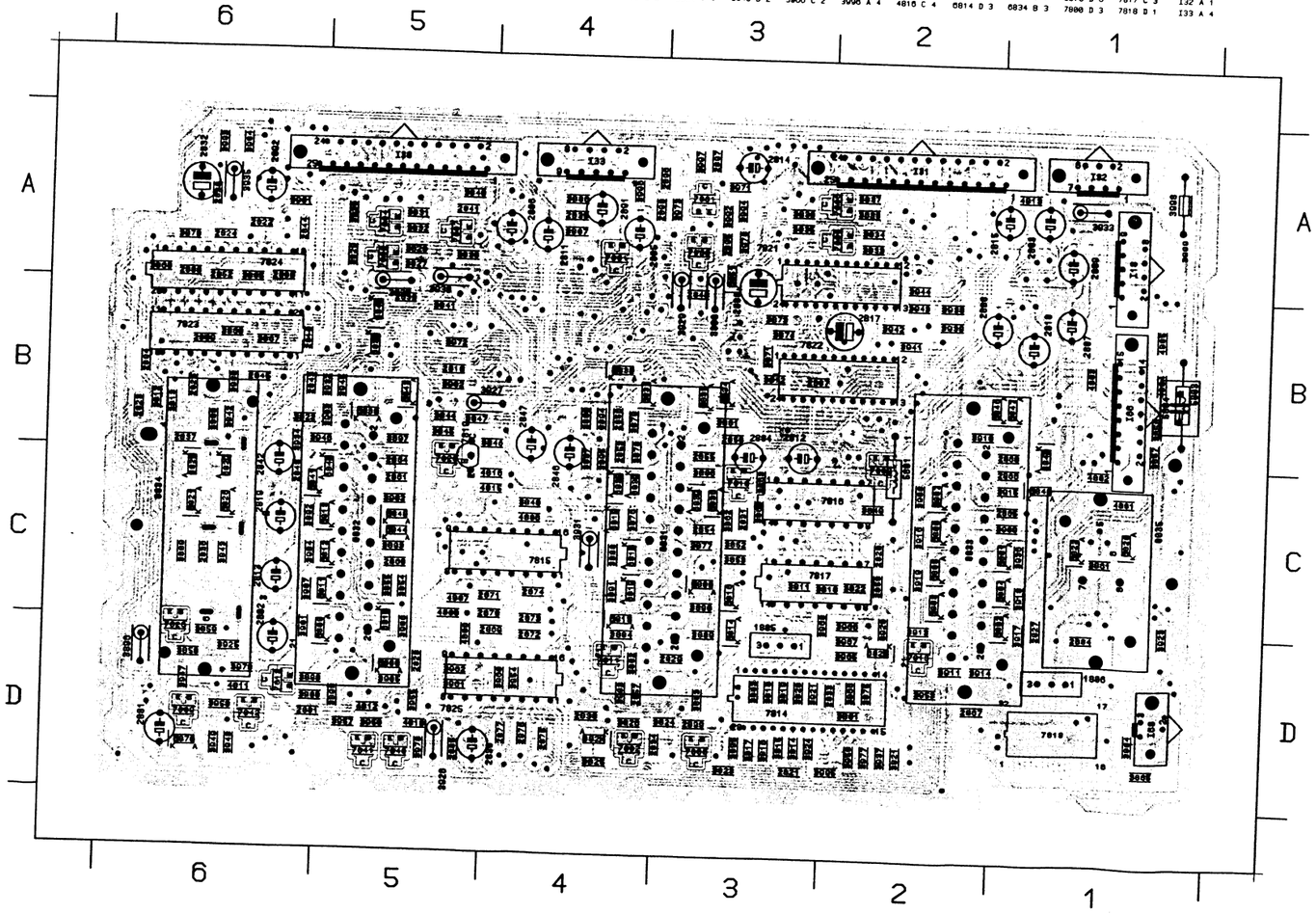
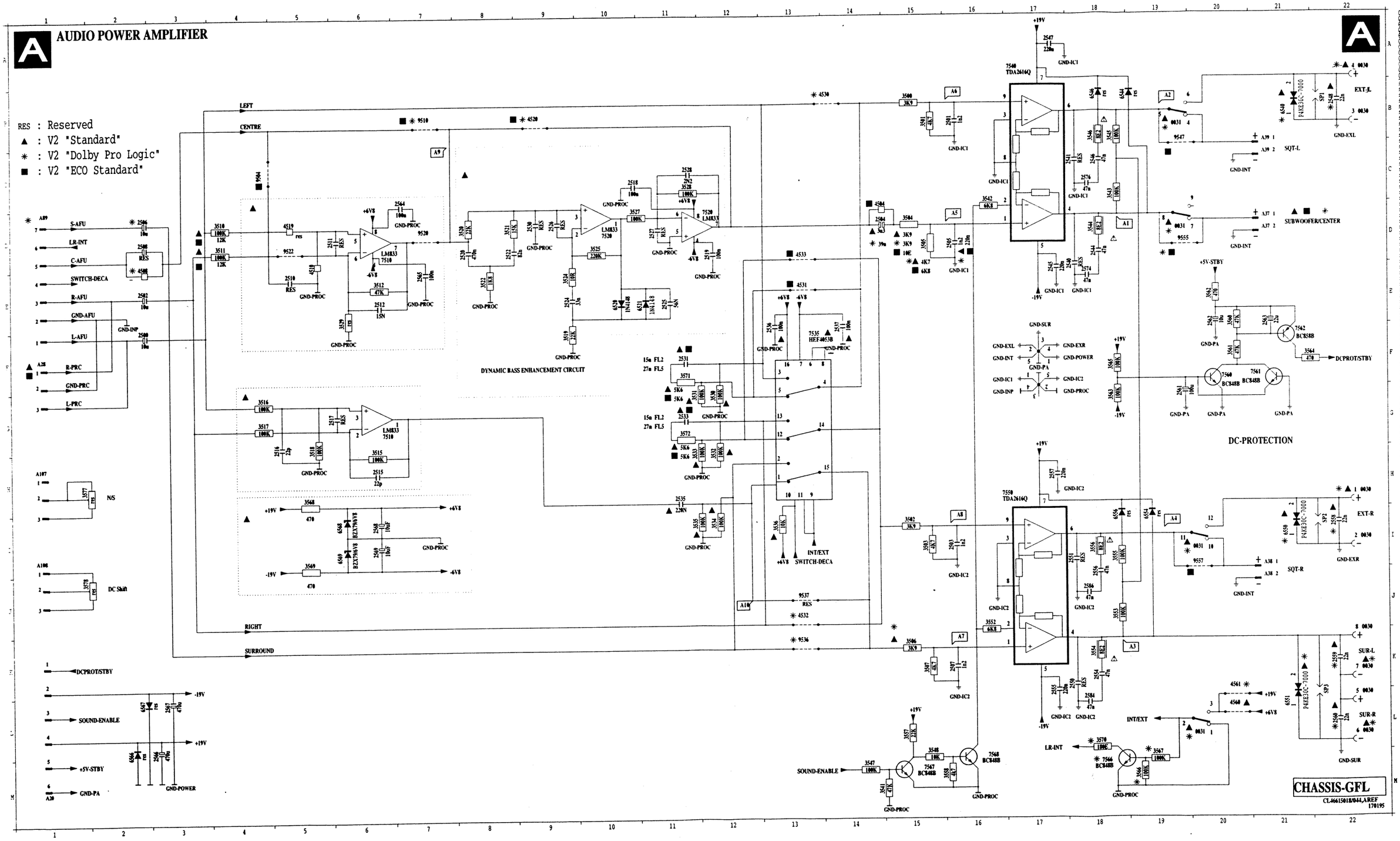
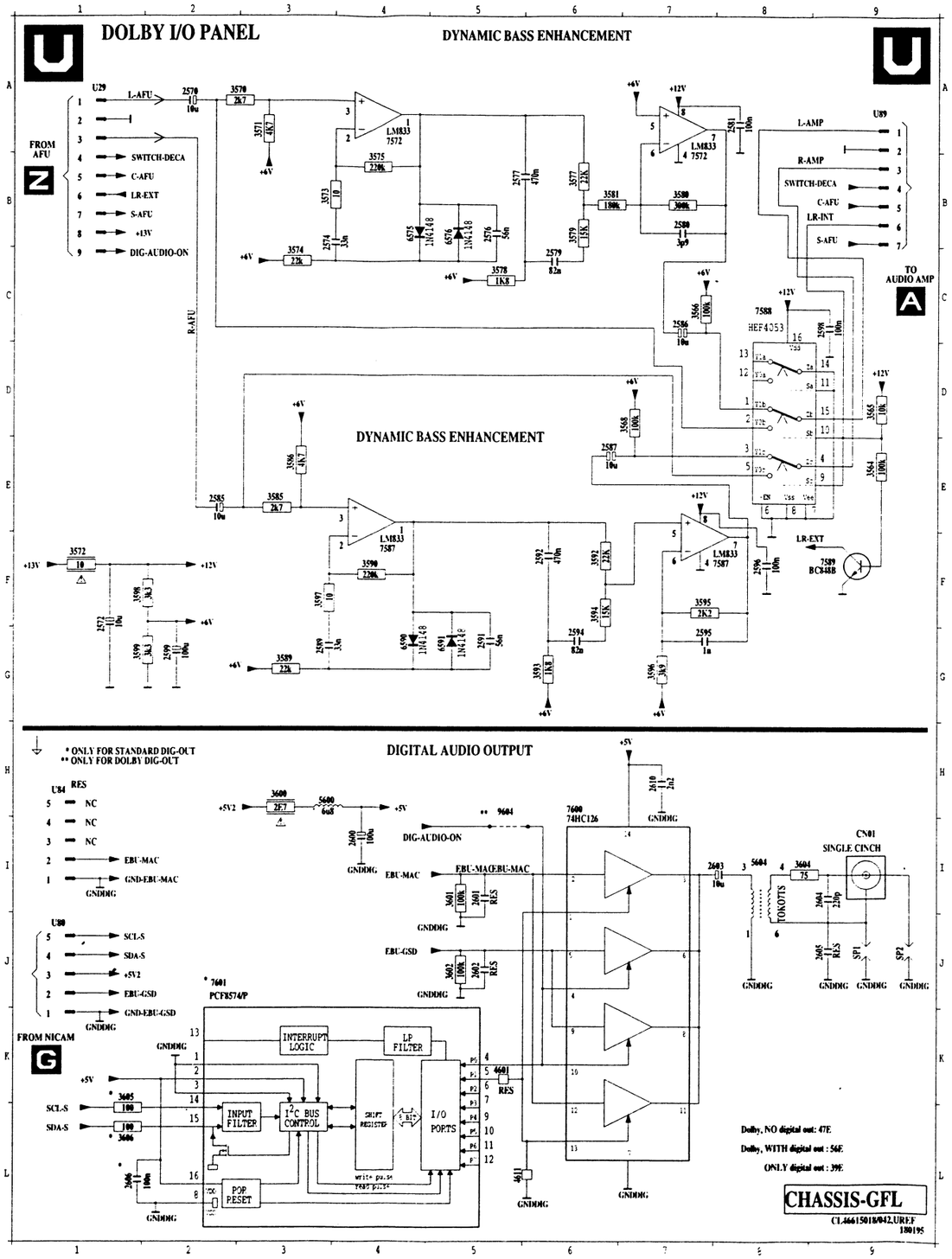


Amplificateur final audio

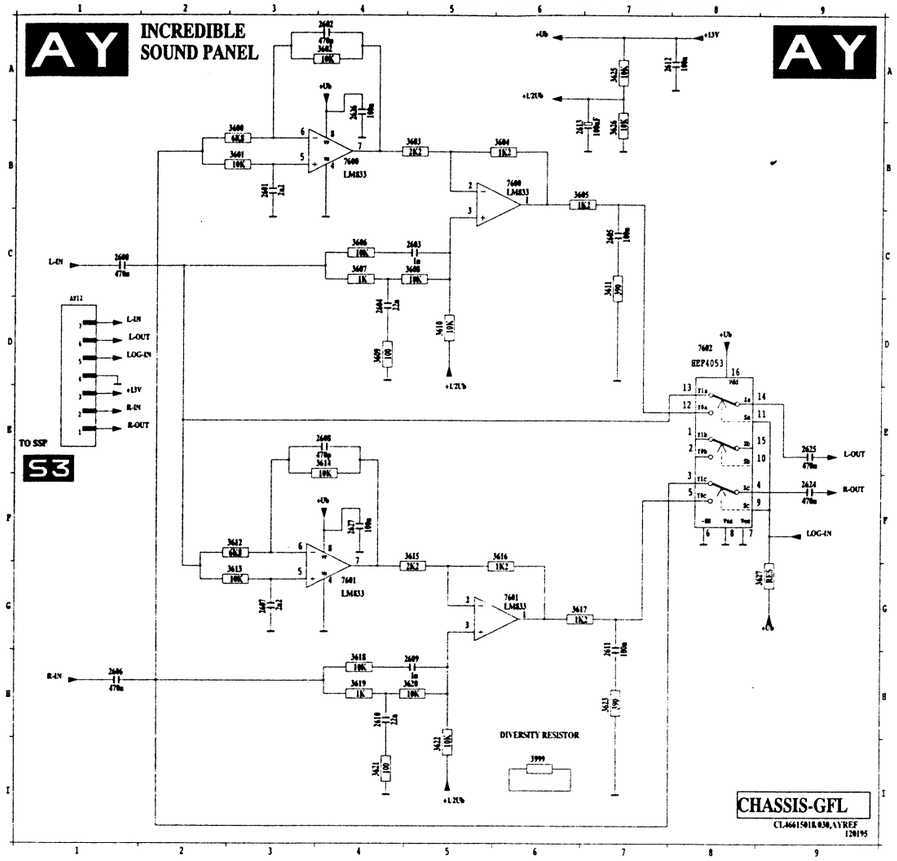


I/O dolby panel / I/O dolby Platte / Platine I/O dolby



29 A

Incredible sound



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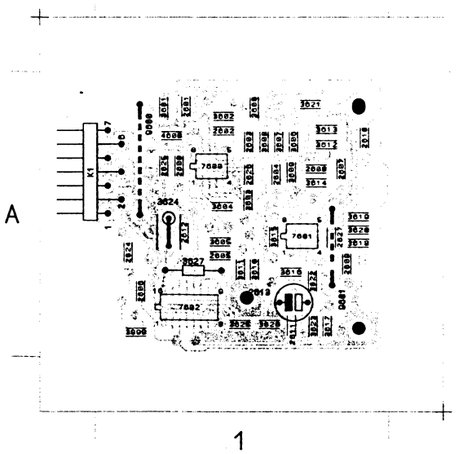

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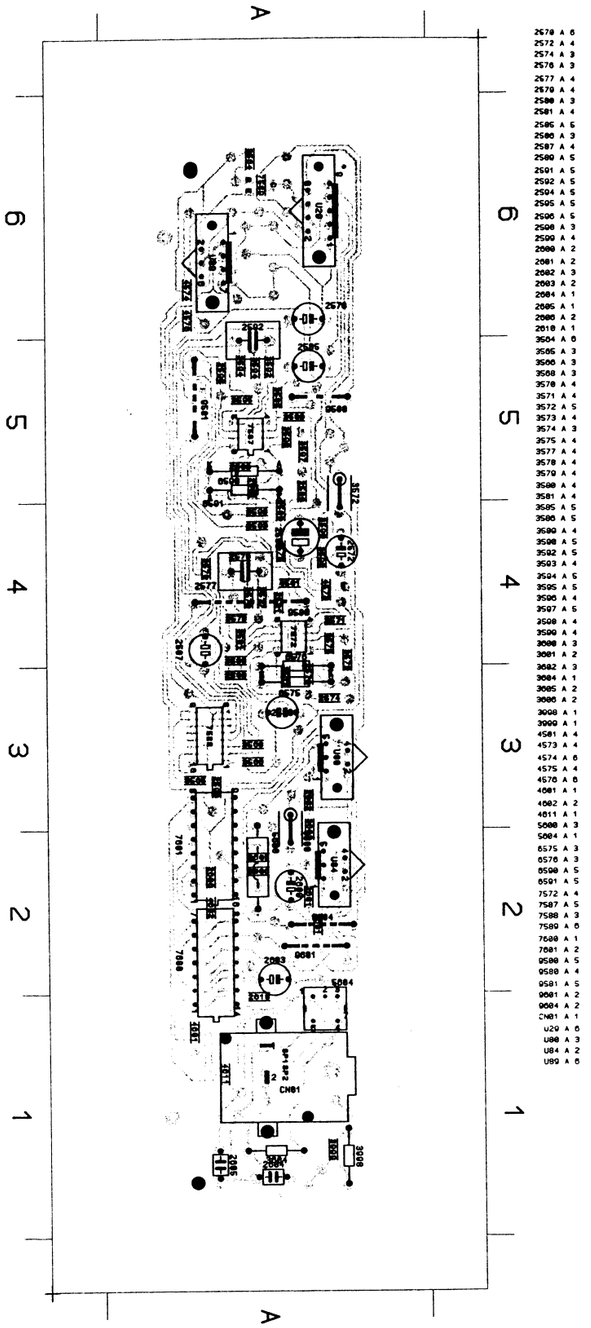


Global sound decoder / Global Sound Dekoder /

Decodeur global sound

GLOBAL SOUND DECODER

NICAM PROCESSING

MULTI MONO + STEREO FM DEMOD.

POS/NEG DETECTOR

pin 6 of IC 7590	pin 5 of IC 7590	MODE
0	0	6.5
0	1	4.5
1	0	6.0
1	1	5.5

TO SSP

SA

PCS 80 701

OBAL SOUND DECODER

NICAM PROCESSING

MULTI MONO + STEREO FM DEMOD.

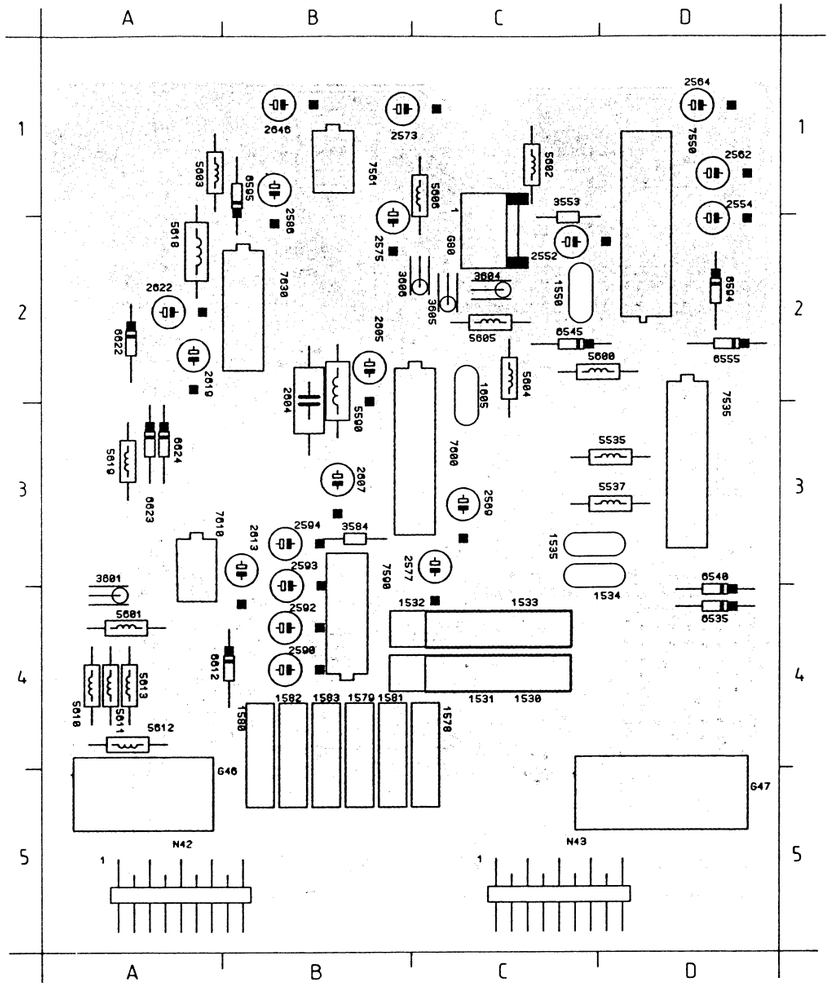
POS/NEG DETECTOR

AUTOMATIC FM SYSTEM DETECTOR

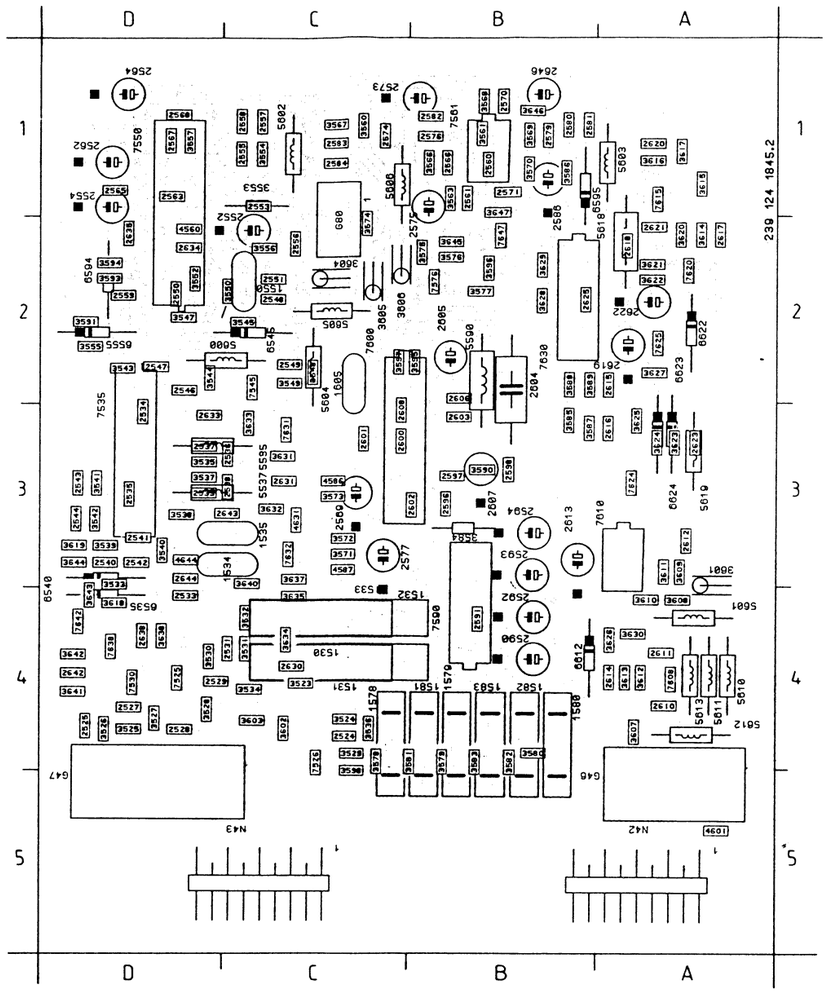
pin 6 of IC 7590	pin 5 of IC 7590	MODE
0	0	6.5
0	1	4.5
1	0	6.0
1	1	5.5

CHASSIS-GFL

Platine decodeur global sound



Global sound decoder panel / Global Sound Dekoder Platte /



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G46 A5	2547 D3	2586 B2	2634 D2	3554 C1	3596 B2	3634 C4	6545 C2
G47 D5	2548 C2	2590 B4	2635 D2	3555 D2	3597 C3	3635 C4	6555 D2
G80 C2	2549 C3	2591 B4	2638 D4	3556 C2	3598 C5	3637 C4	6594 D2
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2529 D4	2568 D1	2613 B4	3537 D3	3580 B5	3619 D4	5600 D3	7620 A2
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2537 D3	2575 B2	2619 A2	3543 D3	3586 B1	3625 A3	5606 C2	7638 D4
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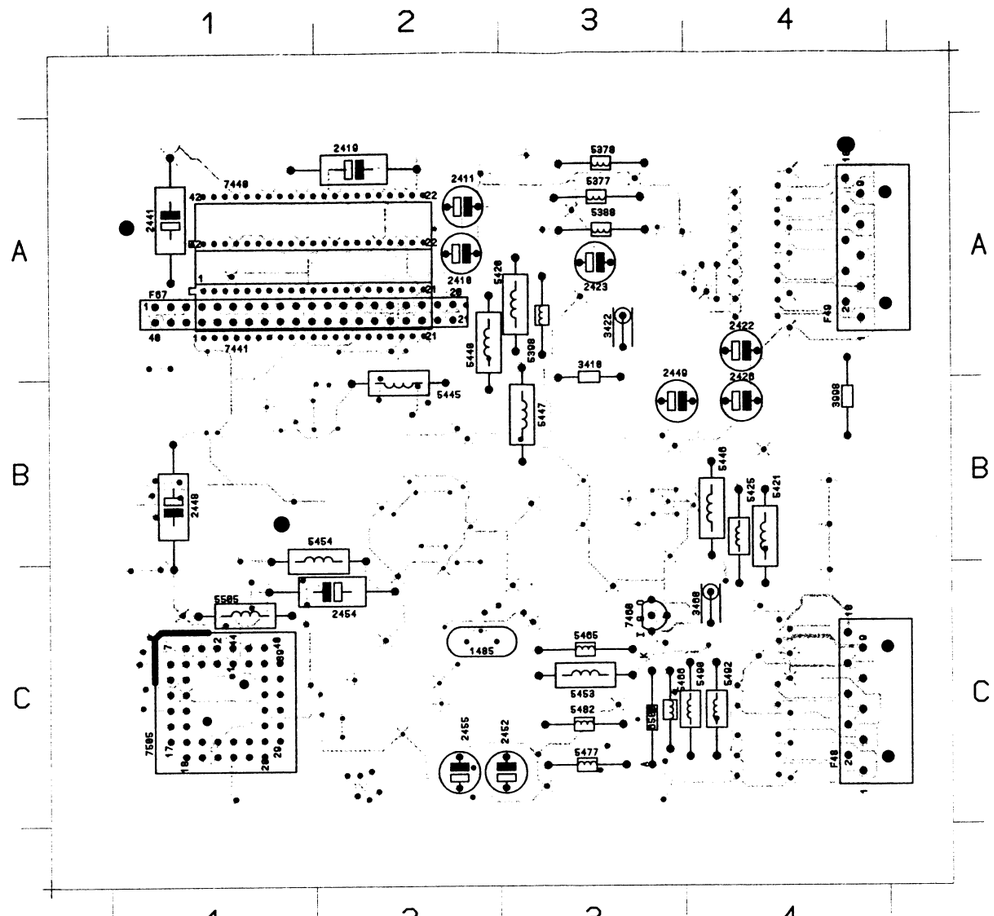
Feature box (100Hz digital scan) panel



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F1
100mV/div
10µs/div

F2
200mV/div
10µs/div

F3
200mV/div
10µs/div

F4
1V/div
2ms/div

F5
1V/div
5µs/div

F6
200mV/div
20µs/div

F7
200mV/div
20µs/div

F8
200mV/div
20µs/div

F9
1V/div
20µs/div

F10
1V/div
5ms/div

F16
1V/div
0.5µs/div

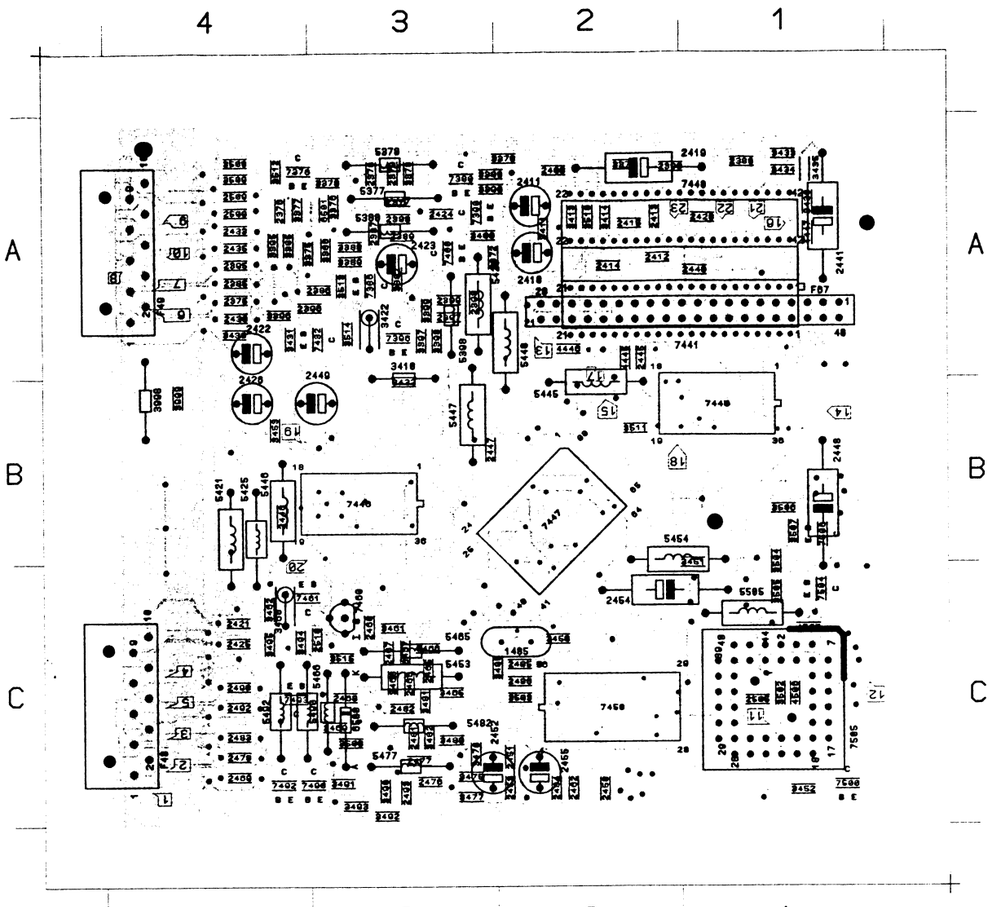
F17
1V/div
20µs/div

F18
1V/div
10µs/div

F19
1V/div
10µs/div

F20
1V/div
10µs/div

PCS 80 703



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2395 A 4 2421 C 4 2448 B 1 2468 C 3 2508 A 4 3387 A 3 3422 A 3 3462 C 4 3491 C 3 3510 A 2 5378 A 3 5477 C 3 7440 A 1 7506 B 1

F11
1V/div
0.5µs/div

F12
1V/div
50ms/div

F13
500V/div
50ns/div

F14
1V/div
20µs/div

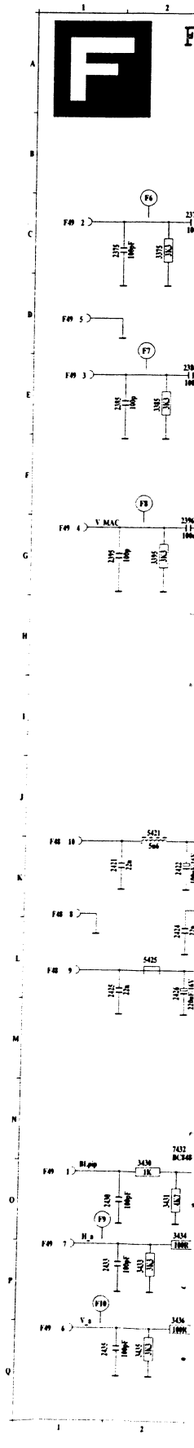
F15
1V/div
0.5µs/div

F21
200mV/div
20µs/div

F22
200mV/div
20µs/div

F23
200mV/div
20µs/div

Feature box



FEATURE BOX 3

F

F

FRONTIC

MEMORY

MEMORY

PROZONIC

BENDIC

uP

CHASSIS-GFL

AI (FEATUREBOX)

AI (FEATUREBOX)

7006 QFP44

7007 Subtitle RAM MSM51257AL-10

7008 SMARTIC QFP80

7009 P89C52GBB-B uPROCESSOR QFP44

7010 QFP52

CHASSIS-GFL

CL46615018049.ARref 040195

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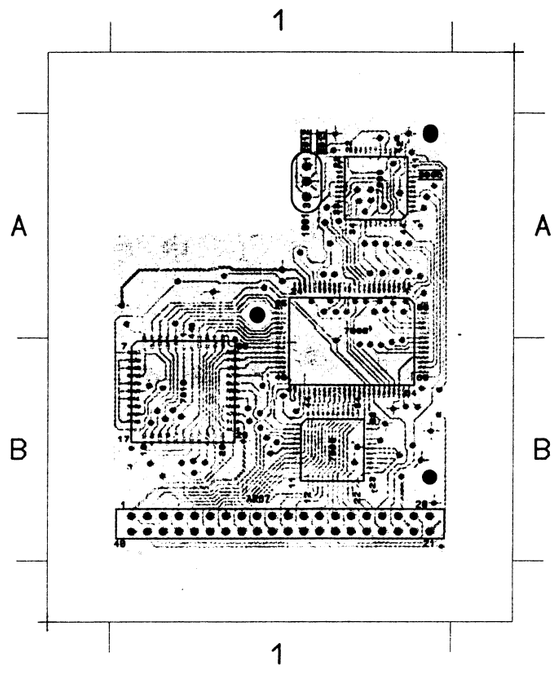

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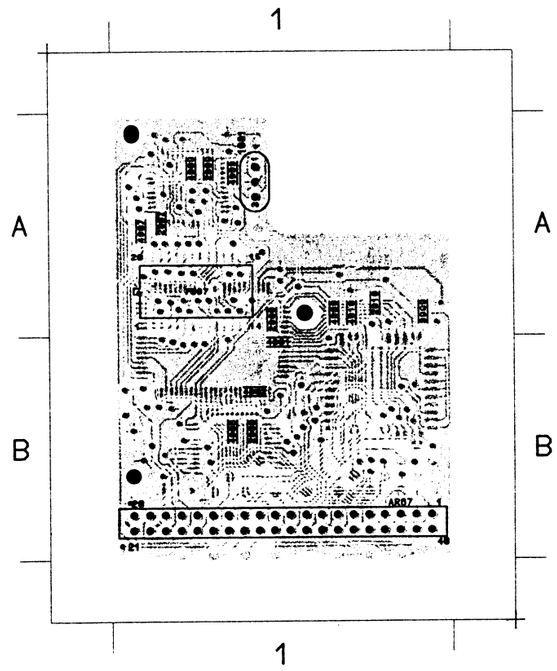

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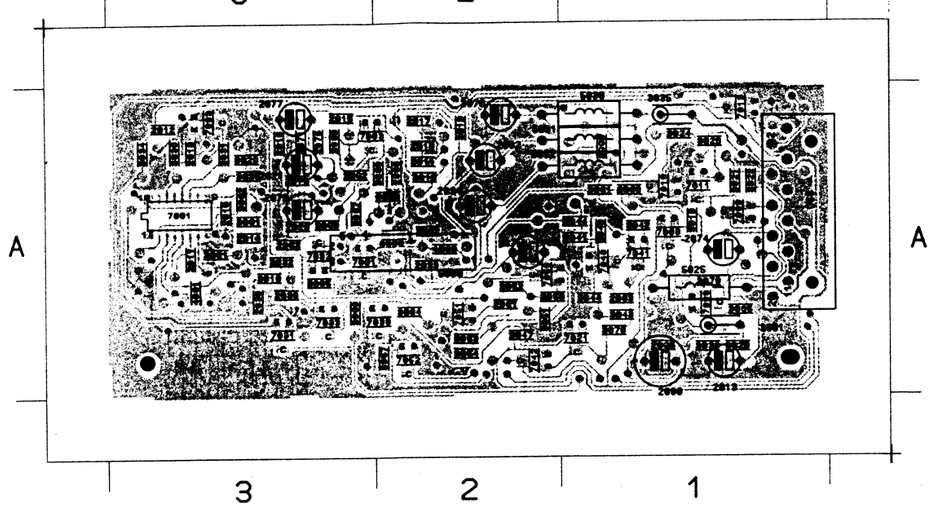

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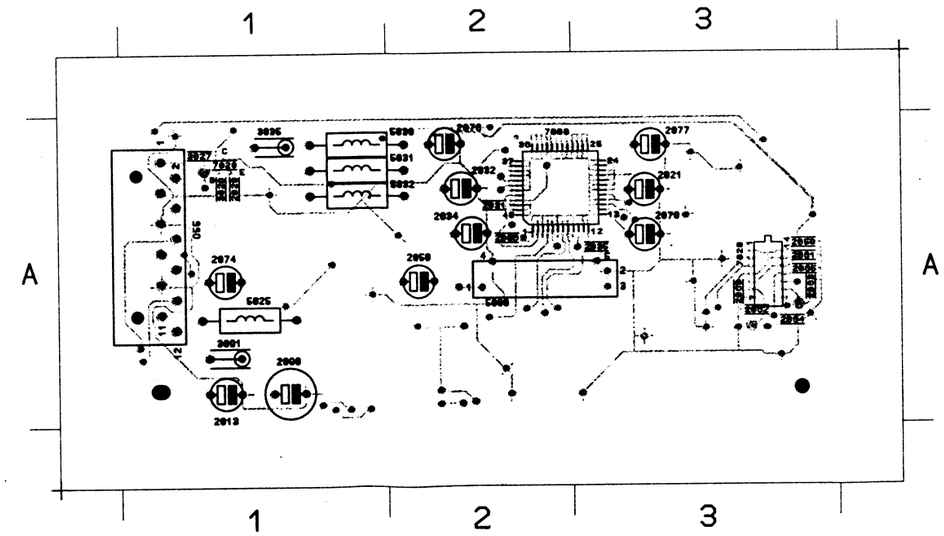
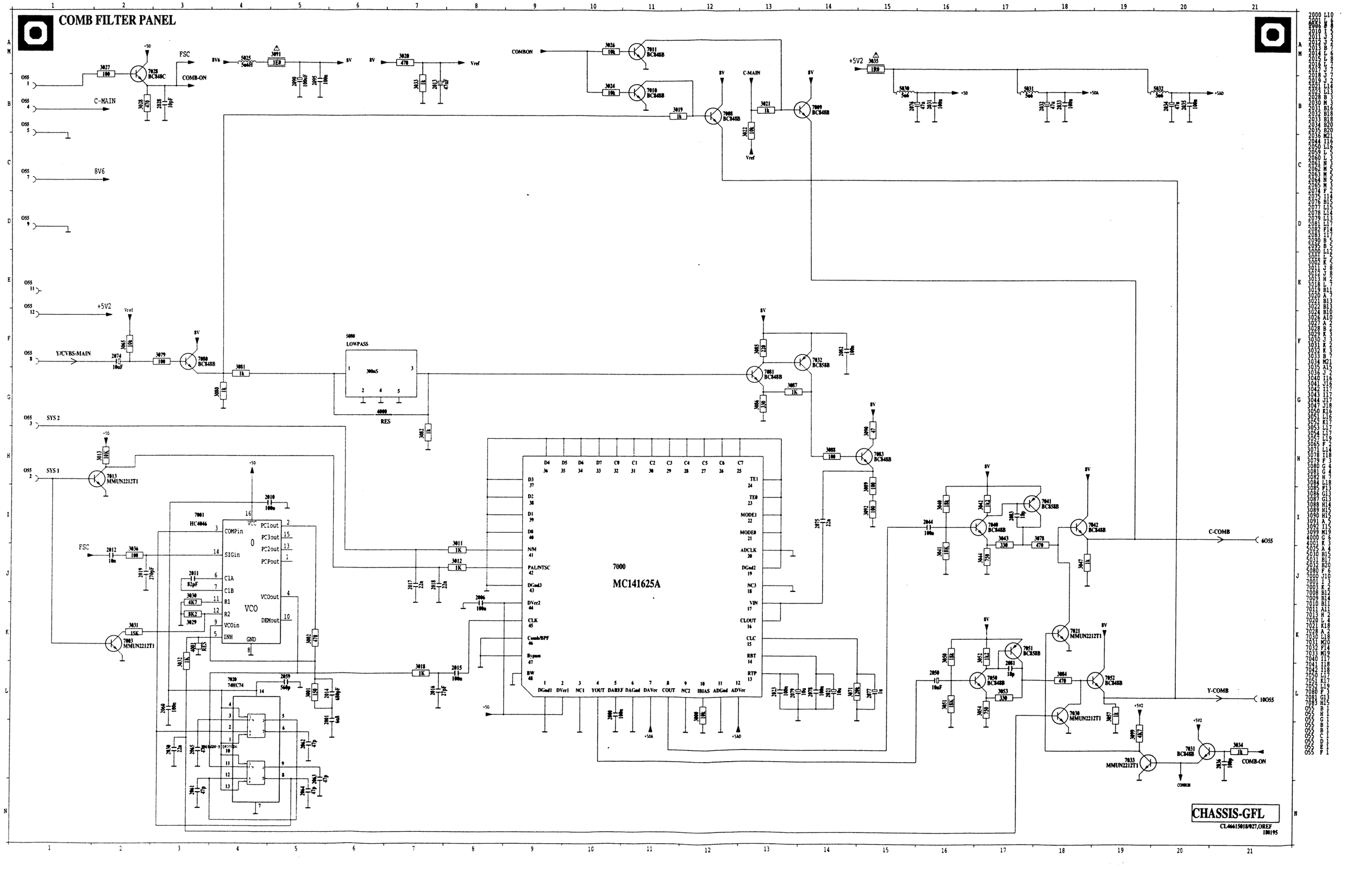


COMB FILTER PANEL



VCI PANEL/RGB CLIPPER

W

W

SB

FROM SSP

R

TO PTP

W1

7W59 R-IN

6W59 3400 22 5400 5u6 +13A

2400 100u

1W59

3W59

4W59

3575 910

4575 5575 5VUS DELAY

3576 3K 3577 1K5

3578 160E 7578 BC848B 3579 560

7579 BC858B 2578 RES 3580 680 3581 res

3450 470 7450 BC848B 3451 470E

2577 22n 3452 22 R-VC 3W40 W4 2W40

3423 100K 3422 100K 7400 LM339 3424 10K

3V2 0V 3V1 W7

7425 BC848B 7426 BC848B

3425 150 3431 220E 3428 100k 3426 100K 2425 10u 3429 2k2

7427 BF824 3427 68E

SOFTCLIPPER

W2

8W59 G-IN

GATE

3583 910

4585 5585 5VUS DELAY

3584 3K 3585 1K5

3586 160E 7588 BC848B 3587 560

7589 BC858B 2588 RES 3588 680 3589 res

3460 470 7460 BC848B 3461 470E

2587 22n 3462 22 G-VC 5W40 W5 4W40

3433 100K 3432 100K 7400 LM339 3434 10K

3V3 0V 3V1

7435 BC848B 7436 BC848B

3435 150 3438 100k 3531 220E 3436 100K 2435 10u 3439 2k2

7437 BF824 3437 68E

SC-1FH SC-2FH

10W59 3430 10k 3410 47K 3411 8K2

7400 LM339 0V7 1V7 2V

2402 22n 3412 10K 3413 680k

2401 22n 11V4 VDD CP DS PL

SHIFT REGISTER 8-BITS

7410 HEF4021BP P0 P1 P2 P3 P4 P5 P6 P7 VSS

Q5 Q6 Q7

IN4148 6401 IN4148 6402

2410 220p

3421 22k

11W59 VFB 3420 1k 7420 BC858B

W3

9W59 B-IN

3591 910

4595 5595 5VUS DELAY

3592 3K 3593 1K5

3594 160E 7598 BC848B 3595 560

7599 BC858B 2598 RES 3596 680 3597 res

3470 470 7470 BC848B 3471 470E

3472 22 B-VC 7W40 W6 6W40

3443 100K 3442 100K 7400 LM339 3444 10K

3V2 0V 3V1

7445 BC848B 7446 BC848B

3445 150 3448 100k 3441 220E 3446 100K 2445 10u 3449 2k2

7447 BF824 3447 68E

3402 2k2

12W59 SCL-ADJ.

2W59 EHT-INFO 1W40

5W59 BC-INFO 8W40

CHASSIS-GFL

CL46615018/026,WREF

130195

2400	B 2	7446	I 8
2401	E 3	7447	I 9
2402	E 2	7450	A13
2410	F 3	7460	D13
2425	C 8	7470	G13
2435	F 8	7578	A11
2445	I 8	7579	A12
2577	A13	7588	D11
2578	A11	7589	D12
2587	D13	7598	G11
2588	D11	7599	G12
2598	H11	7W40	H14
2W40	B14		
3400	A 1		
3402	H 5		
3410	E 1		
3411	E 2		
3412	D 3		
3413	E 3		
3420	G 2		
3421	F 2		
3422	B 6		
3423	B 6		
3424	B 7		
3425	C 8		
3426	C 7		
3427	B10		
3428	C 7		
3429	C 8		
3430	E 2		
3431	C 8		
3432	E 6		
3433	E 6		
3434	E 7		
3435	F 8		
3436	F 7		
3437	E10		
3438	F 7		
3439	F 8		
3441	I 8		
3442	H 6		
3443	H 6		
3444	H 7		
3445	I 8		
3446	I 7		
3447	H10		
3448	I 7		
3449	I 9		
3450	A13		
3451	B13		
3452	B13		
3460	D13		
3461	E13		
3462	E13		
3470	H13		
3471	H13		
3472	H13		
3531	F 8		
3575	A 8		
3576	A10		
3577	B10		
3578	A11		
3579	B11		
3580	B11		
3581	B12		
3583	D 8		
3584	D10		
3585	E10		
3586	D11		
3587	E11		
3588	E11		
3589	E12		
3591	G 8		
3592	G10		
3593	H10		
3594	G11		
3595	H11		
3596	H11		
3597	H12		
3W40	B14		
4575	A 9		
4585	C 9		
4595	F 9		
4W40	E14		
5400	A 2		
5575	A 9		
5585	D 9		
5595	G 9		
5W40	E14		
6400	E 3		
6402	F 2		
6W40	H14		
7400	E 2		
7400	B 7		
7400	E 7		
7400	H 7		
7410	F 3		
7420	G 2		
7425	B 8		
7426	B 8		
7427	B 9		
7435	E 8		
7436	F 8		
7437	F 9		
7445	H 8		

VCI panel (RGB clipper) / VCI Platte (RGB-Clipper) /

1102 A 1	2434 A 1	2437 A 1	2448 A 1	2444 A 1	2455 A 4	2465 A 3	3008 A 4	5452 A 3	5468 A 2	7051 A 3	7401 A 4			
2151 A 2	2435 A 1	2438 A 1	2441 A 1	2445 A 1	2459 A 4	3148 A 2	5152 A 1	5454 A 2	6002 A 2	7250 A 1	A050 A 1			
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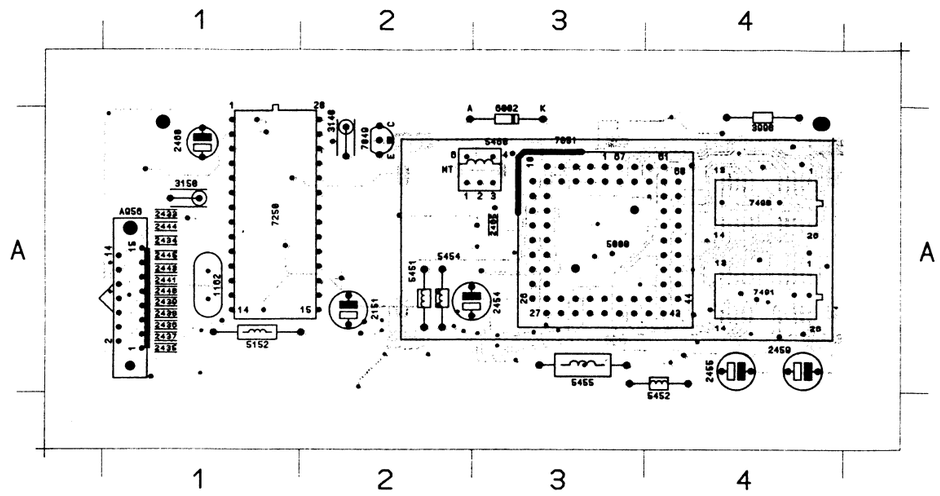

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2151 A 2	2160 A 1	2442 A 1	2453 A 4	2463 A 3	2471 A 2	3153 A 2	3456 A 4	3481 A 4	3491 A 3	4452 A 3	5452 A 3	7850 A 2		
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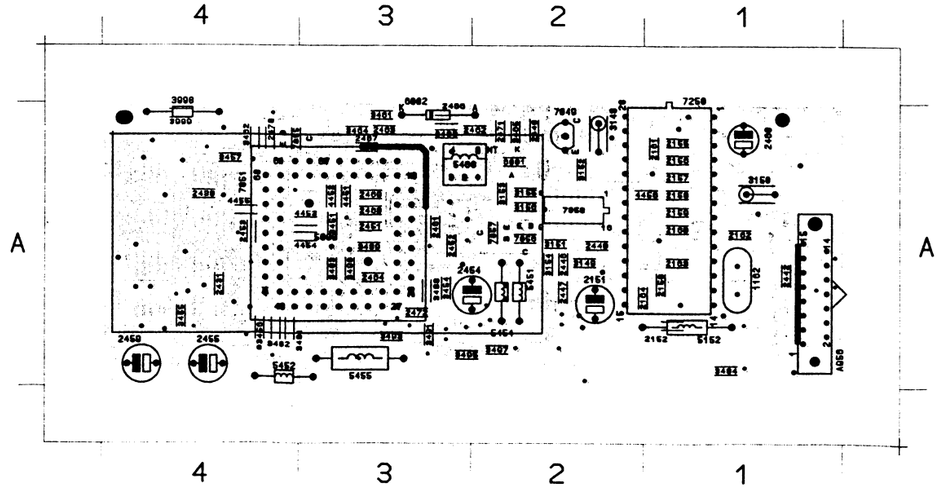
2156 A 1	2163 A 1	2448 A 2	2459 A 4	2467 A 3	3149 A 2	3156 A 2	3462 A 4	3484 A 1	3497 A 2	4455 A 4	5468 A 2	7950 A 2		
2157 A 1	2164 A 2	2449 A 2	2468 A 1	2468 A 3	3150 A 1	3451 A 3	3463 A 3	3488 A 3	3998 A 4	4456 A 1	6001 A 2	7057 A 2		



PCS 80 708

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2402 A 1	3420 A 1	3436 A 1	3460 C 1	3585 C 1	4584 A 2	7427 B 2	9500 C 2							
2410 A 1	3421 A 1	3437 B 1	3461 B 1	3586 C 2	4585 B 1	7435 A 1	9501 B 1							
2425 B 2	3422 A 2	3438 B 1	3462 B 1	3587 C 1	4575 C 2	7436 A 1	9502 B 1							
2435 B 1	3423 B 2	3439 B 1	3470 B 2	3588 C 1	4585 C 1	7437 B 1	9503 C 1							
2445 B 1	3424 A 2	3441 B 2	3471 B 2	3589 C 1	4595 C 2	7445 A 2	9504 B 1							
2577 B 1	3425 A 2	3442 A 2	3472 B 2	3591 C 2	5400 B 1	7446 B 2	9505 A 1							
2578 C 2	3426 B 2	3443 B 2	3531 B 1	3592 C 2	5575 C 2	7447 B 2	9506 A 1							
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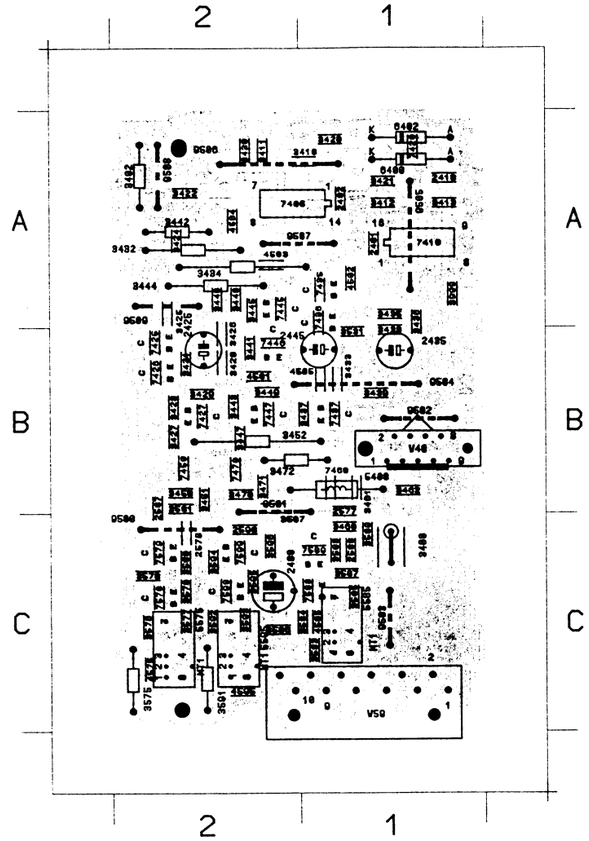
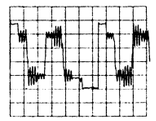
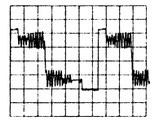


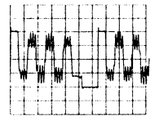
W1
500mV/div
5µs/div



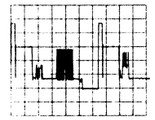
W2
500mV/div
5µs/div



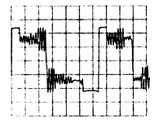
W3
500mV/div
5µs/div



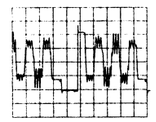
W4
500mV/div
5µs/div



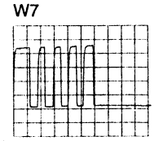
W5
500mV/div
5µs/div



W6
500mV/div
5µs/div



W7
2V/div
5µs/div



PCS 80 707

Teletext decoder panel / Videotext-Dekoder Platte / Platine decodeur teletexte

GFL2.20 E 37

TELETEXT

PLL

VIDEO INPUT PROCESSOR

TXT-DECODER

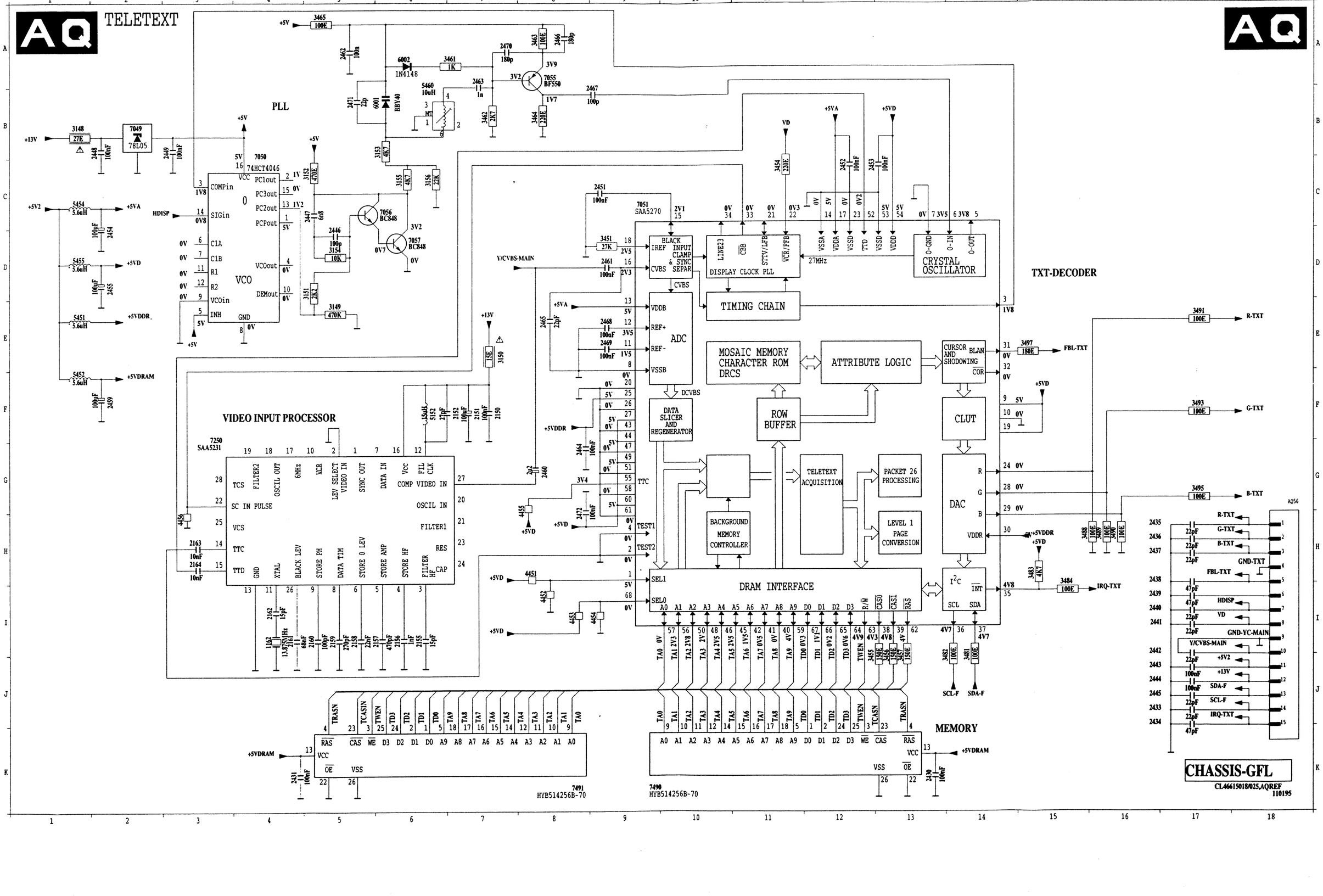
MEMORY

DRAM INTERFACE

CHASSIS-GFL

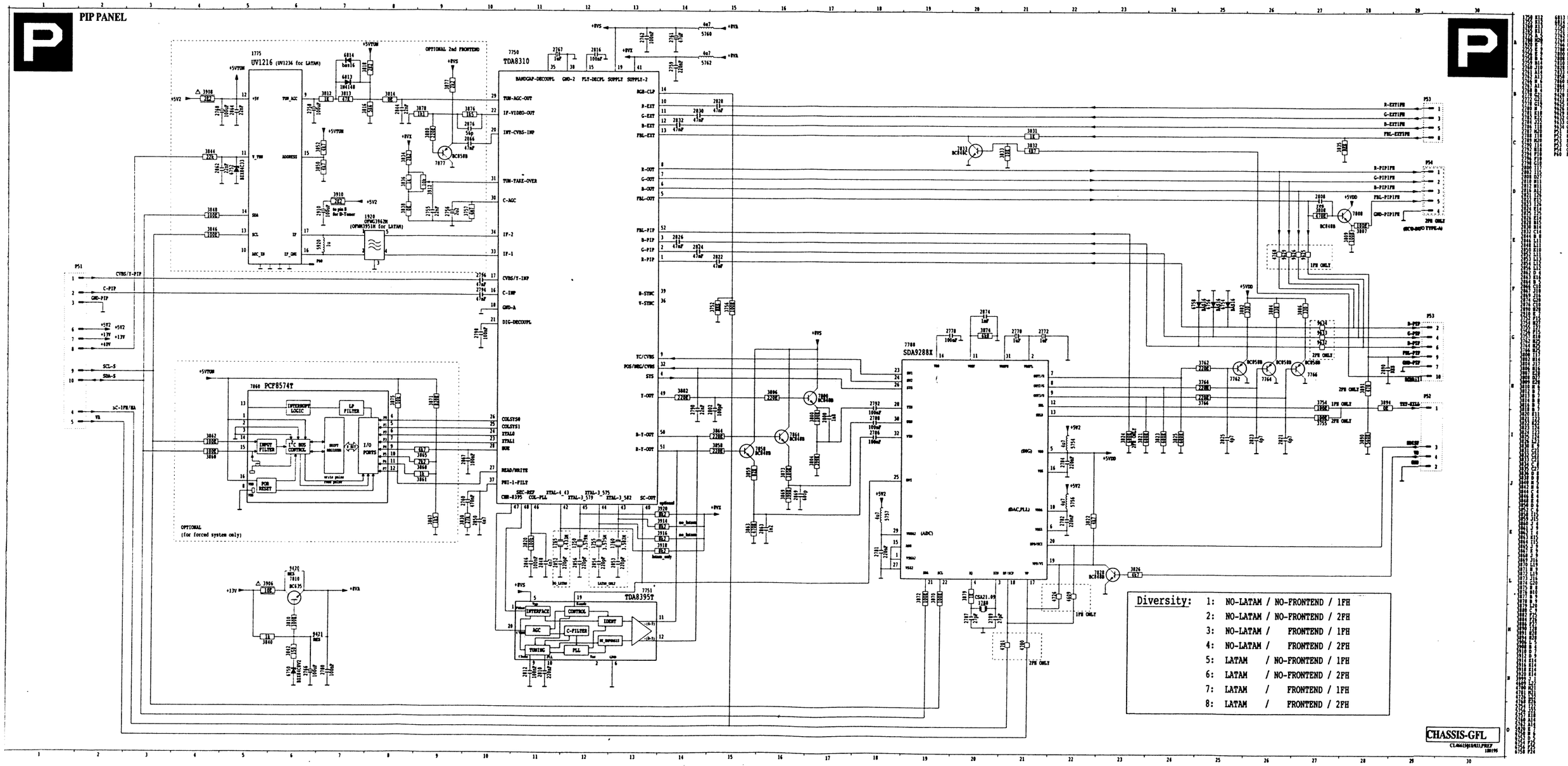
CL46615018/025,AQREF

110195



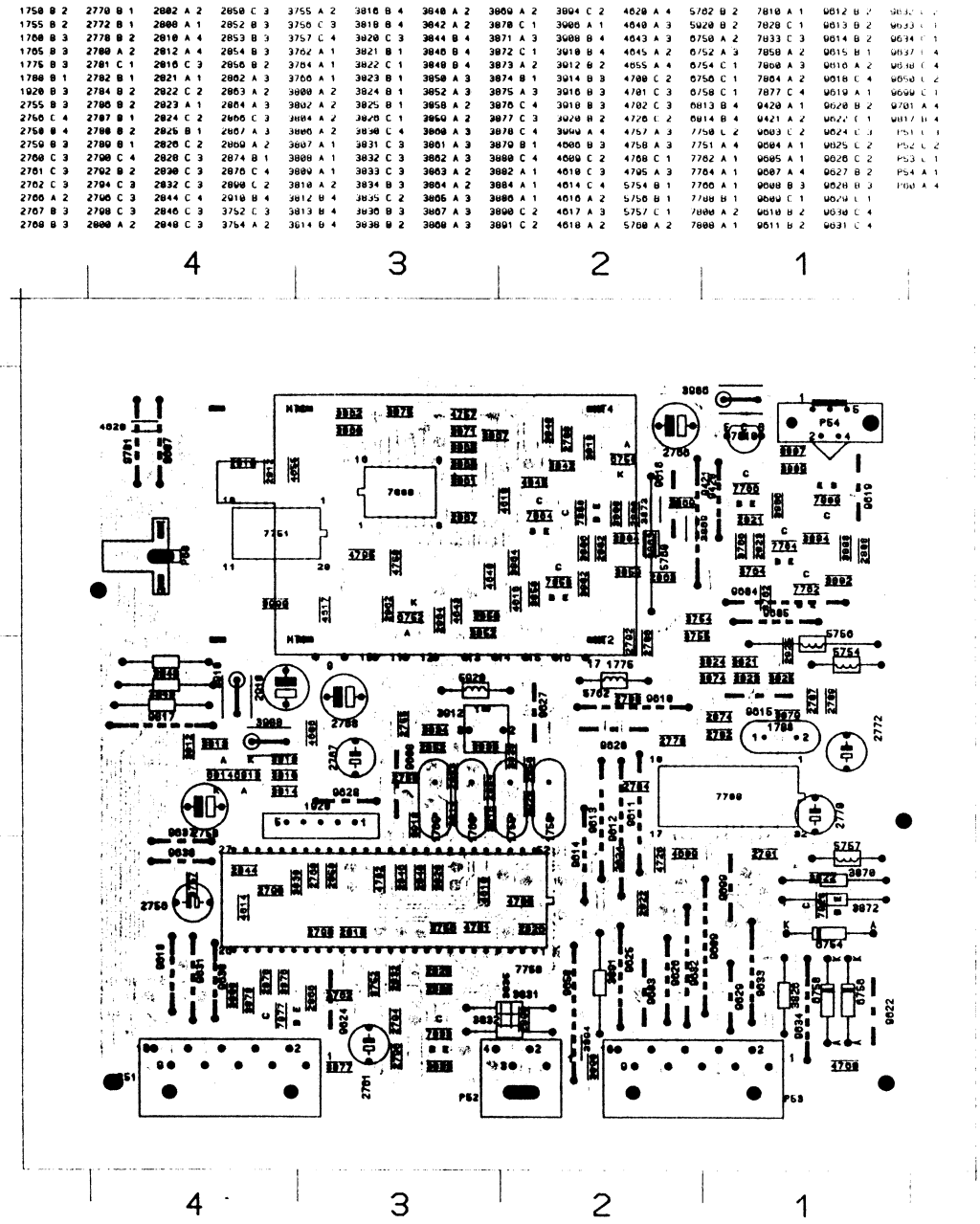
Platine image dans image

PIP PANEL



37B

Picture in picture panel / Bild



7. Electrical adjustments

Adjustment conditions

All electrical adjustments should be performed under the following conditions:

- *Power supply voltage*: 220-240V ± 10% 50-60 Hz ± 5%
- Warm-up time = 10 minutes
- The voltages and oscillograms are measured in relation to tuner earth. Never use the heat sinks as earth.
- Test probe: Ri > 10 MΩ; Ci ≤ 20 pF.

1. Adjustments on the large signal panel

1.1 +141V power supply voltage

Connect a voltmeter to L5316.
With the aid of R3187 adjust the power supply voltage on the FFS DRIVE CIRCUIT to +141V ± 0.5V.

1.2 +5V2 power supply voltage

Connect a voltmeter to pin 1 of L13.
With the aid of R3120 adjust the voltage to 5.2V ± 50mV.

1.3 Focusing

This is adjusted with the focus potentiometer (uppermost on the line transformer).

1.4 Vg2 adjustment

Switch on the Vg2 test pattern via the Service Alignment Menu (see 7.3).
With the aid of a DC voltmeter (Ri > 1MΩ) measure the DC voltages on pin 9 of the RGB output amplifiers IC7230, IC7240 and IC7250 on the picture tube panel. Find the highest of the three voltages and with the aid of the Vg2 (SCREEN) potentiometer on the line output transformer adjust it to 158V ± 2V.

1.5 Horizontal centring (DC-offset)

Switch on the geometry test pattern via the Service Alignment Menu (See 7.5).
(For this purpose select in sequence: Alignments, Geometry, Test pattern on, picture width).
Using R3442 adjust the picture in such a manner that the test pattern appears in the middle of the picture tube.

Remarks:
The 'Horizontal Shift' adjustment in the Service Alignment Menu **cannot** be adjusted with the internal test pattern. An external test pattern from a generator or an aerial must be used for this purpose.

2. CVBS level adjustment on the small signal panel

Feed a CVBS colour bar signal with an amplitude of 700mV (between black and white level) to pin 20 of EXT1 and select the display from EXT1.
Using R3161 on the SSP [S5] adjust the amplitude of the signal on pin 8 of IC7500 (TDA4780) on the SSP [S6] to 325mV (between black and white level).

3. Adjustment North-South correction on 4:3 SF picture tubes

With the aid of R3461 on the N/S panel [AP] adjust the North-South geometry until this is optimum.

4 Adjustment of the PIP module [P]

This adjustment is only applicable to PIP modules equipped with a tuner.

Introduction
The AGC adjustment prevents the PIP tuner from being overdriven by a strong aerial signal. Overdriving is visible as a loss of colour and synchronisation in the PIP picture. The amplification must be adjusted to minimum level, but the signal should be as free from noise as possible. At maximum amplification R3912 is fully left, on minimum amplification R3912 is fully right.

Adjustment
Feed in a (strong) aerial signal of 4mV (72dBuV).
Turn R3912 fully right (minimum amplification). Turn R3912 slowly left until the noise no longer decreases.
If an aerial signal is not available as a compromise adjust R3912 to 30% of the total adjustment range (100% is maximum adjustment, fully left).

5. Adjustments in the service alignment menu

Activate by:
- briefly short circuiting the service pins 'ALIGNMENT MODE' on the SSP;

or:
- pressing the ALIGN key on the Dealer Service Tool (DST) (RC7150), followed by entering the password 3140 and pressing the 'OK' key.

The Service Menu will now appear on the screen.
This displays the following information:

1. The software date ('Date') and version ('Ver.') of the ROM.
2. The total number of operation hours ('Operation Hours').
3. The contents of the error buffer ('Errors'). The most recent error is at the top, immediately following the 'ERRORS' indication.
4. The module that generated the error ('Defect. Module'). (If there are more errors in the buffer not caused by one individual module there is probably another error. The message 'UNKNOWN' is then displayed here).
5. Menu item 'Reset Error Buffer'. The error buffer can be erased via the key.
6. Menu item 'Functional Test'. All devices are tested via the key. Eventual errors are displayed at the error buffer location. (The error buffer is not erased; the contents return when the Functional Test is closed).
7. Menu item 'Alignments'. This enables the Alignments sub menu to be called up.

The following adjustments can be selected:
- 'General': Adjustment of 'White Drive', 'Cut-off', 'Soft clipper', 'Peak White Limiter', 'PIP brightness', 'Input level stereo decoder', 'Stereo channel separation'.
- 'Normal Geometry': General geometry adjustments.
- 'Super wide geometry': Geometry adjustments of the 'Panorama' position in 16:9 sets (not for other positions).
- 'Options': Setting of the initialisation codes in the set via text.
- 'Option number': All options together, expressed in two long numbers. The original factory settings of these numbers can be found on a picture tube sticker inside the set.
- 'Store': Preserving all adjustments.

The adjustments
General:
- After all adjustments have been completed the item 'STORE' must be selected to store all values in the permanent memory.
- When the option codes have been modified and stored the set should be switched off and on again with the mains switch in order to activate the new adjustments. (When switching off and on via stand-by the option code settings are NOT read in by the microprocessor).
- If an empty EAROM (permanent memory) is detected all options receive the pre-programmed standard values.
- In various menus a built-in test pattern can be called up. The test pattern generator can be activated with the item 'TEST PATTERN ON/OFF'. The test pattern only appears following the selection of the specific adjustment. The test patterns are generated by the teletext module.

5.1 Picture tube adjustments

White Drive
Before adjusting turn off DNR and 'Contrast Plus'.
Use the internal test pattern (a white picture). Adjust the white level for the three adjustments 'WARM', 'NORMAL' and 'COOL'. Begin in the 'NORMAL' position and take the standard value for green (value 32) as a basis, and then adjust red and blue.

The factory settings of the colour temperatures are:

	Europe	*Hong Kong*
'Warm'	7200K	7200K
'Normal'	8700K	9500K
'Cool'	10200K	12000K

In case no colour analyzer is available the following values can be maintained for 'White Drive':

	Cool	*Normal*	*Warm*
R	25	26	28
G	26	26	25
B	18	16	13

Cut-off
Before adjusting turn off DNR and 'Contrast Plus', set the brightness adjustment to step 37 (brightness:), and contrast to maximum.
Use the internal test pattern (a black picture).
Use a Minolta CA-100 colour analyzer and adjust the light output for the adjustments 'COOL', 'NORMAL' and 'WARM' to 3 NIT with the colour temperatures below:

	Europe	*Hong Kong*
'Warm'	7200K	7200K
'Normal'	8700K	9500K
'Cool'	10200K	12000K

In case no colour analyzer is available the following values can be maintained for 'Cut-off':

	Cool	*Normal*	*Warm*
R	23	24	29
G	20	20	20
B	27	20	14

Soft-clipper
Use a black picture with a small white square in the middle as a test pattern. Adjust contrast to maximum. Adjust 'Peak White Limiter' temporarily to 63. Using a colour analyzer measure at the middle of the white square and with the aid of 'Peak White Limiter' adjust the light output as follows:
29"SF : 520 NIT
32" : 320 NIT
28"WS : 680 NIT

In case no colour analyzer is available the following values can be maintained for 'Soft Clipper':
29"SF : 'Soft Clipper' = 49

Peak White Limiter
Use a black picture with a small white square in the middle as a test pattern. Adjust contrast to maximum. Adjust 'Soft Clipper' temporarily to 63.

Using a colour analyzer measure at the middle of the white square and with the aid of 'Peak White Limiter' adjust the light output as follows:
29"SF : 520 NIT
32" : 320 NIT
28"WS : 780 NIT

In case no colour analyzer is available the following values can be maintained for 'Peak White Limiter':
29"SF : 'Peak White Limiter' = 22

5.2 Small signal adjustments

PIP brightness
Adjust PIP brightness in such a manner that the brightness of the PIP picture is the same as the main picture.

Stereo decoder input level
Feed in an aerial signal with a PAL BG signal and tune the set.
Select audio mode DUAL and modulate both audio channels with a 1kHz signal with equal amplitude.
Adjust 'Input Level Stereo Decoder' to equal sound volume levels for language selections I and II.

Stereo channel separation
Feed in an aerial signal with a PAL BG signal and tune the set.
Select audio mode STEREO and modulate the left channel with a 1kHz signal, and the right channel with no signal. Switch off the left loudspeaker or adjust the audio balance fully right. Adjust 'Stereo Channel Separation' to minimum sound reproduction from the right loudspeaker.

Electrical adjustments

5.3 Geometry adjustments

Normal Geometry

1. Vertical amplitude and centring
1a. Select 'Test Pattern on'.
With the aid of 'V amplitude' adjust the vertical amplitude so that the test pattern is fully visible.
1b. With the aid of 'V shift' adjust the vertical centring so that the test pattern is positioned vertically in the middle.
Repeat the adjustment of 'V amplitude'.

2. Vertical linearity
Select 'Test Pattern on'.
With the aid of 'V linearity' adjust the vertical linearity so that the picture has equal amplitude at both the top and the bottom.

3. Vertical S correction
Select 'Test Pattern on'.
With the aid of 'V S-correction' adjust the vertical S correction so that the vertical amplitude at the top of the picture is equal to the amplitude in the middle of the picture.

4. Horizontal centring and amplitude
4a. Select 'Test Pattern on'.
With the aid of 'H-amplitude' adjust the horizontal amplitude so that the entire test pattern is visible.
4b. Feed in an external test signal.
With the aid of 'H-shift' adjust the picture horizontally to the middle.
Repeat 4a if necessary.

5. East/West adjustment
Select 'Test Pattern on'.
5a. With the aid of 'East/West parabola' adjust the vertical lines until straight.
5b. With the aid of 'East/West corner' adjust the vertical lines in the corner until straight.
5c. With the aid of 'East/West trapezium' adjust the picture until rectangular.
5d. If necessary select 'East/West top compensation' and adjust it.
Repeat 5a to 5c if necessary.

Super wide geometry
Only applicable to 16:9 sets

1. Vertical amplitude and centring
1a. Select 'Test Pattern on'.
With the aid of 'V amplitude' adjust the vertical amplitude so that the test pattern is fully visible.
1b. With the aid of 'V shift' adjust the vertical centring so that the test pattern is positioned vertically in the middle.
Repeat the adjustment of 'V amplitude'.

2. Horizontal amplitude
Select 'Test Pattern on'.
With the aid of 'H-amplitude' adjust the horizontal amplitude so that the entire test pattern is visible.

3. S correction
Select 'Test Pattern on'.
With the aid of 'S-correction' adjust the S correction so that the vertical amplitude at the top of the picture is equal to the amplitude in the middle of the picture.

4. East/West parabola
Select 'Test Pattern on'.
With the aid of 'East/West parabola' adjust the vertical lines until straight.

5. Horizontal centring and amplitude
Feed in an external test signal.
With the aid of 'H-shift' adjust the picture horizontally to the middle.

5.4 Options

Introduction
The microprocessor communicates with a great number of IC's in the set. For good communication, and to make digital diagnosis possible, the microprocessor has to know which IC's have to be addressed. The presence of specific IC's or functions is made known with the aid of the option codes. Only correctly set option codes ensure a correctly functioning set, and the correct error message in case of a defect.
The options are divided into different groups. These groups contain the various options for which multiple choices are usually possible.

An overview follows below:
(See table)

5.5 Option number

IF the EAROM has to be replaced all the options have to be set again. In order to be certain that the factory settings can be reproduced exactly the HW Opt No (Hardware option number) and the SW Opt No (software option number) have to be set. These numbers can be found on a sticker on the picture tube.

TV Systems	Tuner Type	FQ916(D)MF FQ916MR FV916MG FQ916MD FQ836D FS968 Chinese Tuner FQ944D	Select tuner type (type number is on the tuner)
Stereo Decoder	Nicam Type	Not Available BG or I BG and I Eco Nicam	No Nicam Nicam with 2 IC's and 1 input filter Nicam with 2 IC's and 2 input filters Nicam with 1 IC
	2 CS	Yes No	TDA9840 present on SSP TDA9840 not present on SSP
	Global	Yes No	Global sound decoder present Global sound decoder not present
Satelite	Sat. Mod. Available	Yes No	Satellite module present Satellite module not present
	Pulse Magnetic	Yes No	Polarizer panel present Polarizer panel not present
PIP	PIP Available	Yes No	PIP module present PIP module not present
	PIP Version	Euro Latam Japan	European PIP module South American PIP module (reserved) Japanese PIP module (reserved)
	PIP Tuner Type	Not Available Euro Latam Japan	no PIP tuner European PIP tuner South American PIP tuner (reserved) Japanese PIP tuner (reserved)
	PIP Processor	PIP1 PIP2	PIP with TDA4650 (no longer used) PIP with TDA8310
	Triple PIP	Yes No	(reserved)
	Forced Colour	Yes No	For PIP 1 yes For PIP 2 yes, if PCF8574 is present
Teletext	TXT	mem-128 mem-512 mem-1M	128 kB teletext memory 512 kB teletext memory (1x514256) 1 MB teletext memory (2x514256)
Communication	D2B	Yes No	D2B connector present D2B connector not present
	ESI	Yes No	reserved
	EACAM	Yes No	reserved
	Project 50	Yes No	reserved
Video	Frame	Digital Scan 100/120 Hz 50/60 Hz	Feature box present Eco feature box present No feature box present
	Combfilter	Not Present SAA4961 MC 141625	No Comb filter present Comb filter with SAA4961 Comb filter with MC 141625
	Scavem	No Yes	SCAVEM without TDA8444 SCAVEM with TDA8444
Source Selection	SS Type	Euro AV1 Euro AV2 Euro AV3 Cinch AV1	Fully populated double-sided EURO I/O panel (EURO) Semi populated double-sided EURO I/O panel (ECO) Single-sided EURO I/O panel CINCH I/O panel
	Euro AV3	None Normal	No 3rd EURO connector (only with EURO I/O) 3rd EURO connector present
	Euro AV4	None Normal	No 4th EURO connector (only with EURO I/O) 4th EURO connector present
	Euro AV	No Yes	No EURO connector (only with CINCH I/O) EURO connector present
CRT Type	4:3 16:9		4:3 picture tube 16:9 picture tube
Audio Repro	Basic Equalizer Eq. + Dolby		TDA9860 present on SSP AFU panel without Dolby AFU panel with Dolby
Digital Output	No Yes		no digital output present digital output present (NICAM also present)

8. Circuit description

8.1 Introduction

The GFL chassis is based on a Large Signal and a Small Signal panel. These panels are called LSP and SSP.
The SSP contains the front-end which is a combination of tuner with IF circuit, the micro processor, the audio/video small signal processing and synchronisation part. The Teletext functions will also be on the SSP in future, but for now it is placed at a small separate panel for the introduction of the chassis. The SSP is based on a double sided printed wiring board with metallized holes and small SMD (surface mount device) components at the underside of the board.
The LSP contains the power supply, line and frame output stages and the Digital Deflection Processor to control the geometry of the picture. The LSP is based on a robust printed wiring board without SMD components. The deflection processor and the power supply control circuit are placed on vertical panels on the LSP.
The audio amplifiers are placed on a separate board.

8.2 The three power supplies

The GFL chassis contains three power supplies:
- the stand-by supply or also called ELPS;
- the main supply or also called FFS;
- the auxiliary supply or also called AUX1.

8.2.1 *The stand by supply ELPS [AU]*

The stand-by supply is placed vertically in a bracket together with the mains filter at the right hand side of the chassis. This supply delivers the +5.2 volt supply for the micro-processor and some parts of the I/O panel during stand-by and normal operation.
In order to limit power to a maximum of 5 watts in stand-by the two power supplies (FFS and AUX1) are switched off. The stand-by voltage (+5V2) is provided by a separate power supply that delivers the +5V2 both during normal operation and in stand-by.
The stand-by power supply is built up around S5145. The secondary voltage of S5145 is rectified by D6141, D6146, D6147 and D6148, and smoothed by C2138 and C2141. Stabilisation is performed by T7135, which is located on the LSP. D6134 provides a voltage increase of 0.2V, so that the stabilised voltage is 5V2.

8.2.2 *The main supply (FFS) [L2] (Fig. 8.1)*

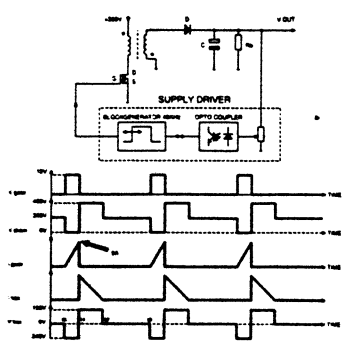


Fig. 8.1

The FFS (Fixed Frequency Supply) is a mains isolated switched power supply. The operational frequency is 40KHz and stabilisation is achieved by adjusting the duty cycle. The feedback of the output voltage is performed through an opto-coupler. The control and stabilisation circuits are located on the FFS-drive panel, which makes service simpler. The FFS can be switched to stand-by by the micro processor after the stand-by command is given or in a situation that the protection mode has to be activated. The power supply is short-circuit resistant and protected against overvoltage and overcurrent.

The FFS provides the following power supply voltages:
- +19V / -19V sound.
- +141V.
- +25V (SAT only).

Principle of the FFS power supply

At t0 a positive voltage arrives on the gate of the switching FET 7111. This starts conducting and 300V is fed to the primary transformer coil, causing a linearly increasing current. The maximum current depends on the time the FET conducts. This conduct duration is regulated by IC 7150 on the FFS drive panel [N]. The duty cycle regulator is controlled via an opto-coupler by part of the output voltage.
On t1 the FET gate becomes negative, this blocks and the DRAIN current increases. The secondary voltage becomes positive, the rectifier diodes start conducting and a current starts flowing through the load. All the energy that was stored in the transformer during t0-t1 is now supplied to the load. During the time the energy is supplied to the load, the voltage on the primary side, at the drain of the FET, increases up to 480 volts.
At t2 the current through the secondary coil becomes zero. The secondary voltage is now also zero, causing the FET drain voltage to drop to 300V.
If the FET is made to conduct once more, the cycle starts again.

Pulses on FFS transformer T5125 (Fig. 8.2)

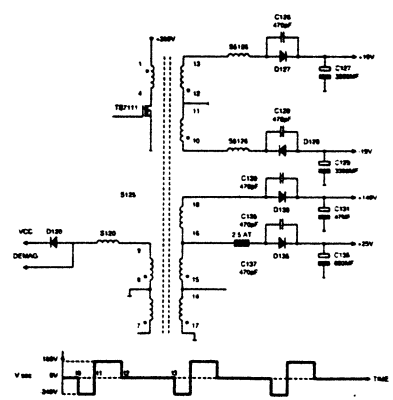


Fig. 8.2

During the time t0-t1 TS7111 becomes saturated. There is 300V over the primary coil. If the mains voltage increases or drops by 10% all secondary voltages will also increase or drop by 10% during this period:
- pin 13, pin 14, pin 16, pin 18 and pin 9 are negative so that diodes D6127, D6130, D6135, D6137 and D6120 block.
- pin 10 is positive so that D6128 blocks.

During the time t1-t2 TS7111 blocks. The voltage on C2131 is stabilised at 140V. All voltages have a fixed relation to this +140V and therefore constant. On overload the +140V therefore also drops with all secondary voltages.

- pin 13, pin 14, pin 16, pin 18 and pin 9 are positive so that the diodes D6127, D6130, D6135, D6137 and D6120 conduct. The capacitors are also charged.
- pin 10 is negative so that D6128 conducts.

The secondary side of the FFS drive circuit is supplied by the +5V ST-BY from the stand-by supply. Pin 9 of the FFS transformer supplies the power supply current for the primary side of FFS drive circuit.

The oscillator

The control of the FFS is done by the MC44603 IC at position 7150 on the FFS drive panel. The oscillator generates a saw-tooth pulse (pin 10, 7150), the frequency is set to 48KHz by C2166 and R3177.

Slow start and maximum duty cycle

The starting voltage for the IC is supplied through R3101/3103 and C2101. Once started, the primary coil of the transformer (pin 9) supplies the power supply current to the IC via S5120 and D6120. At start the power supply output voltage is still 0V, through which the FFS would start with max. duty cycle, which would result in a too high peak current through the switching FET.
To prevent this, C2170 on the FFS drive panel charges slowly after start up. The voltage on pin 11 therefore, increases slowly. As a result the power supply begins with a small duty cycle, avoiding the switching FET to become damaged. This is called the slow start.
The voltage on pin 11 determines the maximum duty cycle and is selected by an external resistor R3170.

Stabilisation

Stabilisation is performed on the 141V so that all secondary voltages are also stabilised, but derived from the 141V. With R3187 on the FFS drive panel the output voltage of 141 volt can be adjusted. The 141V is fed to parallel stabiliser IC7185 via a voltage divider. This is a zener IC (TL431) which current from the cathode (K) to the anode (A) is determined by the voltage on the regulation input (R). This voltage is compared internally with a 2.5 volts internal voltage source. If the voltage on the R input exceeds the 2.5 Volts, the current through the TL431 will increase, causing an increasing current through the opto-coupler. An increasing current through the opto-coupler results in an increasing voltage on pin 14 of the FFS control IC. The larger the voltage on pin 14 the smaller the duty cycle of the output to the switching FET. The smaller duty cycle causes at last a smaller FFS output voltage until the voltage on the R input of the TL431 becomes 2.5 volts again.

If the voltage on pin 14 of IC7150 increases, this results in a drop of the voltage on pin 13, as pin 14 is the inverting input of an op-amp and pin 13 the output. R3173 and C2173 determine the gain of the op-amp. The dropping voltage is compared to the current sense input via a comparator. The comparator output generates an earlier reset of the RS flip-flop so that the FET conducting time is shortened and that the output voltage drops to its set value.

Stand-by and DC protection

After the DC protection line is activated on the FFS drive panel, T7190 conducts and a large current flows through the opto-coupler. This means that the power supply voltage is adjusted back to 0V. This DC prot line can be activated by the stand-by command from the micro processor or from the protection circuit on the audio power amplifier.

Overcurrent protection

The voltage over R3124/3125/3126 is a measure for the current flowing through the primary side of FFS transformer 5125. That voltage is fed to the current sense input pin 7 of IC7150. The maximum current is limited internally in the IC. The max. current through the primary side is 9A.

In case the load of the power supply is increased further, the output voltage will drop. In order to limit dissipation during overload the foldback circuit is activated.

Foldback circuit

In case the load increases to a level the primary current should exceed 9A, the output voltage will drop. This voltage drop will affect the supply of the IC (pin 5 of IC7150) as the IC is supplied via pin 9 of the T5125, D6120, D6157, R3157 and R3158. In case the voltage drops below 1V the maximum current threshold is adjusted automatically.

A reduced primary current also means that the power supply delivers less output current. This causes an avalanche effect so that the power supply is quickly adjusted back.

Overvoltage protection

If the voltage on pin 6 of the IC becomes larger than 2.5V the power supply stops. Then voltage drops out and the power supply will restart, which can cause the voltage become larger than 2.5V again, the supply stops etc, so-called hiccupping or motorboating. The condition arises when the feedback loop is interrupted.

Demagnetisation

In order to avoid TS7111 from being switched on too soon, information is offered to pin 8 of IC7150 that originates from pin 9 of T5125 via S5120 and R3150. As long as this voltage is larger than 65mV TS7111 is prevented from conducting.

The output

Pin 3 of IC7150 controls the switching transistor (MOSFET). Pin 3 has a low output resistance, which benefits the switching speed.

Stand-by

If the power supply only has to supply low power (e.g. stand-by) this is measured via pin 12 of IC7150. The duty cycle becomes smaller and the power supply switches over to a lower oscillator frequency, namely 20kHz. In stand-by the FFS is switched off completely. The FFS is adjusted back fully via TS7190, resulting in the 141V output becoming 0V. The oscillator then also operates at 20kHz.

Switch-off voltage of the FET

The MOSFET switch in the FFS power supply is resistant to a Drain-Source voltage of max. 650V. Due to the short switch-off time, that voltage is actually ± 700V. To protect the switching FET an extra loop has been added. Via D6102, D6103, R3102 and C2102 the switch-off voltage is limited to apβroximately 600V.

DV/DT limiter

Rapid voltage changes on the FET drain cause interference in the picture (Spook). When the FET is switched off, an extremely steep flank is generated. The steepness is limited by C2110 and D6110.

8.2.3 The auxiliary supply AUX1 [L2]

The AUX1 power supply is a DC/DC-converter that converts the 141V from the FFS to a number of DC voltages necessary to supply all small signal devices and the deflection processor:

- +13V
- +8V6
- +5V2
- -8V6 (for SAT sets only)

These AUX1 voltages are zero in stand-by mode. The AUX1 supply is placed on the LSP on the left hand side from the FFS.

Principal

The AUX1 supply (DC/DC converter) applied in the GFL is based on the Current Mode Controller principle; Regulation occurs through the measurement of a secondary voltage and a primary current. Depending on the voltages measured the switching transistor is driven for a longer or shorter period, resulting in a higher or lower primary voltage.

Pulses on transformer 5230

During the period t0-t1 the switching FET TS7228 becomes saturated. 141V is present over the primary side of the transformer.

- pin 9 and pin 7 are negative so that the diodes 6234 and 6237 block.
- pin 2 is positive so that 6242 blocks.

During the period t1-t2 TS7228 blocks. The voltage on pin 7 is stabilised at +5,2V, and the voltage on pin 9 at +13V.

The regulator IC7203 UC3842

The power supply voltage is connected to pin 7, this voltage must exceed 16V to start-up the IC (this may not drop below 10V during operation).

The oscillator

The IC contains an internal oscillator whose frequency and duty cycle is set by resistor R3216 and a capacitor C2216, connected to pin 8 and pin 4.

Stabilisation

By increasing the load on a secondary voltage, all secondary voltages will drop, resulting in a voltage drop on pin 2 of IC7203. This causes a delay in the MOSFET switch-off time. More energy is stored in the transformer while the MOSFET conducts longer, causing an increase in the secondary voltage.

Overload

During overload the secondary voltages drop rapidly, resulting in a strong drop of the voltage at pin 2. The regulating limit is reached internally, resulting that the maximum power is also being limited.

Short circuit

After short circuiting the power supply all secondary voltages drop, resulting in the supply voltage on pin 7 drops below 10V. Now the IC output is blocked and the MOSFET is no longer driven. Through the RC operation R3220 and C2221 the voltage on pin 7 slowly increases because the FFS 141V supply is still present. If the voltage on pin 7 becomes higher than 16V the IC restarts. If the voltage on pin 7 drops below 10V it will switch off once again.

The circuit

- The start circuit is formed by R3220 and C2221. On starting C2221 is charged via R3220. After start-up the supply is taken over by the AUX1 transformer via pin 9 and D6221.
- The external oscillator frequency is set by R3216 and C2216, the frequency is approximately 70kHz.
- Stabilisation occurs via the +13V and the +5V2 output voltages which are both fed back to pin 2 of the control IC. Voltage changes on the +5V2 are stabilised faster than those on the +13V. Adjustment of the +5V2 is performed through R3210.
- Current measurement is performed by R3231, which voltage is fed back to pin 3.
- To switch the power supply to stand-by TS7201 has been added. In stand-by TS7201 conducts, resulting in the -output of the 2nd internal op-amp of the control IC being connected to earth and causing the smallest of voltages across R3228 to switch off the switching transistor TS7228. All secondary voltages are now absent.

8.3 The Power On Reset pulse (POR) [L and AU] (fig 8.3)

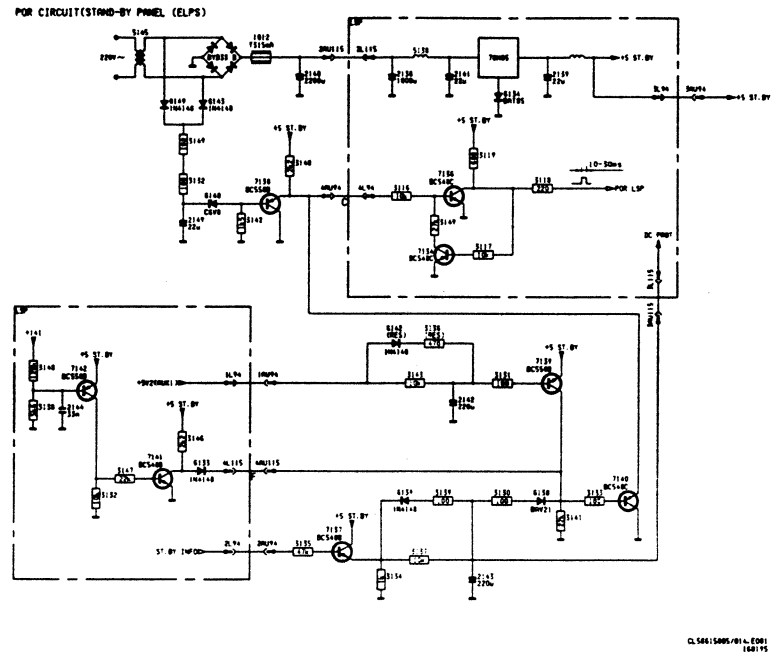


Fig. 8.3

The POR circuit is divided over the LSP and the ELPS panel (stand-by supply). The complete circuit is present in the figure.
The POR pulse is used to initialise the microprocessor and other IC's. After switching on the set via the mains switch, the +5V2 stand-by is available virtually immediately, and as a result, the POR pulse via R3119 and R3118 becomes high immediately. C2149 is however discharged at the moment of switching on, through which D6140 does not conduct. The base of TS3138 is low, TS7134 conducts and TS7136 blocks. The POR pulse remains high.
After a certain time C2149 has charged up enough to make D6140 conduct. TS7138 blocks, TS7136 conducts and the POR becomes low. The length of the POR pulse depends on the mains input voltage, but is between 20 and 60ms.
The initialisation of various IC's starts at the descending flank of the POR pulse. Following this initialisation the set starts up and the stand-by info line originating from the microprocessor becomes low. Once the VCC voltage (the voltage across C2101) of the FFS has reached 18V the power supply starts up. Shortly after the 141V is present, the AUX1 supply starts up generating the 5V2 for the DDP, also causing the line output stage to start up.

Additional POR conditions

- Switching from on to stand-by and from stand-by to on: no POR pulse may be generated.
  This is realised via T7137, R3137, D6138 and TS7140. In stand-by the stand-by info line is high preventing TS7140 from conducting and no additional POR pulse can be generated.
- In stand-by the FFS must be switched off.
  The stand-by info line from the microprocessor is lead to the FFS (DC-PROT line) via R3135, resulting in stand-by mode of the FFS.
- On a voltage drop in the 141V below 70V a POR must be generated.
  In normal situations TS7142 will not conduct, through which TS7141 also blocks and the base of TS7140 is kept high via D6133. At a sudden drop in the 141V or on switching off the set the base voltage will drop below 5V, through which TS7142 starts conducting, TS7141 also conducts making the base of TS7140 low. TS7140 conducts and lowers the base of TS7136, resulting in the POR becoming high until TS7140 blocks.
- The POR pulse may not be influenced for as long as the 141V has not been activated. This is prevented by TS7139. This ensures that TS7140 remains blocked for as long as the 141V is absent. The +5V2 voltage at the base of TS7139 originates from the AUX1 supply which indicates that also the 141V is present.

8.4 The control part [S8]

The control part of the GFL chassis consists of a micro processor, a 512k ROM with the operating software, 32k RAM as working memory and a 2k bytes non volatile memory to store all preset data and customer settings.
The micro processor of the GFL chassis is placed on the bottom side of the SSP and communicates with all devices via several I/O ports and three I^2C serial busses.

Input signals come from:
- RC5 control;
- Local control;
- Status of IC's and modules via I^2C;
- Direct input from certain circuits;
- Interrupt lines such as stand-by, TXT...

The micro processor, ROM, RAM and EAROM

Operating control is built up around a 16-bit microprocessor with an internal interface for ROM, RAM and direct input and output ports. Speedy interruption of the program can be achieved via the interrupt lines.
There are three I^2C busses:
- **The "SLOW" has a clock frequency of 100KHz;**
- **The "FAST" operates at 400KHz and is used to communicate to the Teletext processor only;**
- **The third bus is only used for the EAROM (Non Volatile Memory).**

The software is located in the 512 kByte ROM, IC7202. In the future a 1 Mbyte ROM can also be used. If the output enable line on pin 24 is low 8 data bits are placed on the data bus.
The working memory consists of a 32 kByte RAM, IC7206. The 8 data bits are read out if pin 20 is low. If pin 27 is low the RAM can be written to. All temporarily changes to parameters in a set in operation are stored in this RAM. The contents are lost when the set is switched off.

The Non Volatile Memory, IC7212, contains the pre-programming of the transmitters, option codes, sound and picture adjustments, etc. The EAROM used has a capacity of 2 kByte (16 kB).

EAROM start-up protection

When the power supply voltage rises the POR (Power On Reset) becomes high making TS7214 on the SSP conduct and TS7215 block. TS7216 and TS7217 conduct. This causes both the EAROM power supply and clock (SCL) to be kept low. When the POR becomes low TS7214 blocks resulting in C2213 being charged via R3214 and R3212. At C2213 the test point S01 is coupled on which the presence of the POR pulse can be seen. Charging of C2213 provides a delay of 100 msec of the POR pulse, following which TS7215 conducts and POR 1 becomes low.

The microprocessor now starts up and TS7216 stops conducting so that the SCL line becomes active. Due to C2214 discharging, TS7217 blocks a little later, following which the EAROM power supply current is also present.

If the power supply voltage is too low the POR will become high again, resulting in POR 1 also becoming high. The SCL line and the power supply for the memory IC are interrupted once again.

8.5 The receiving part [S1]

In the GFL chassis the Tuner and the IF section are combined in one small box, the so called Front-end. This Front-end is placed on the SSP. To simplify removing of the Frond-end from the SSP the holes in the SSP are extra wide. There are different types of Frond-ends for different regions, and there are some types with a built in splitter if the set has an extra tuner for PiP. The Front-end is adjusted in the factory and will therefore be adjustment-free afterwards. The outputs of the Front-end are the CVBS baseband video signal, the LF audio signals to be fed to the stereo decoder and the IF signals for NICAM stereo decoding.
The following five types of front ends are used in the GFL chassis:
- FQ 916 ME/PH MK2 BG/L/M or European Multi
- FQ 916 MF/PH MK2 BG/L/L'/I or French Multi
  Sets for countries with BG-systems only, make use of the European multi front-end.
  UK sets (PAL I) make use of the French multi front-end.

For both types of front-ends, there is a model with a built-in splitter:
- FQ 916 DME/PH MK2 BG/L/M
- FQ 916 DMF/PH MK2 BG/L/L'/I

For sets with DK-system there is the version:
- FQ 916 MR/PH BG/DK/M.

There is no model with splitter in this type.

The following abbreviations are used in the front-end types:
- PH = PHono antenna connection (cinch input).
- D = Version with built in splitter
- MK2 = 2nd generation FQ916

The tuner section of the front-end contains the tuning stage and a combined oscillator-mixer. The tuner is I^2C controlled. The full tuning range is divided into a low, mid and high band.
Tuning is achieved by sending a frequency (divider) to the PLL in the tuner. The tuning voltage of approximately 40V is derived from the 141V FFS and stabilised to 33V by zener D6304 on the SSP. Via R3305 a part of this voltage is fed to pin 11 of the front-end. The voltage at pin 11 changes with the tuning frequency. This voltage should increase during the search operation of the installation menu.

Video recognition

When CVBS is present at the front-end output this is reported to the microprocessor via the circuit built up around TS7311 and TS7312 on the SSP. This information is used to suppress the sound if there is no picture.
The emitter of TS7311 is set so that this transistor only blocks during the sync pulse. The collector then becomes high so that positive sync pulses are available. The circuit with C2314, D6312, D6311, R3315 and C2315 detects the pulses, TS7312 conducts and the video recognition becomes high (STR-FE). With noise the average voltage on the CVBS output of the FE is higher than with a video signal. TS7311 conducts continuously and there are no pulses on the collector. TS7312 blocks and the video recognition becomes low.

8.6 The source selection [I]

Just behind the backcover the source select panel is mounted. On this panel the complete source and record selection is done for all signal sources. This panel is also called 'I/O panel'. For Europe there are two versions available: the ECO and the EURO version. For Asian countries we have the Cinch version. The European versions have three 'EURO-AV' or also called 'SCART' connectors. The Cinch version has a large number of cinch connectors. The EURO version has some extra source selection circuitry to be used when the set has a built in satellite mode.

In the ECO version the most important characteristics are:

SCART 1 (VCR or UP-Down)
- no RGB-input
- CVBS and L/R-input
- SVHS in and SVHS out
- all outputs Record Select
- an Up-Down function: the microprocessor selects a priority if multiple signals are connected.

SCART 2 AUX
- RGB-input
- CVBS and L/R-input
- CVBS and L/R-output from front-end

SCART 3 HD
- CVBS and L/R input

Front
- S-VHS and L/R-input

A cinch L,R output that can be switched between constant level and variable level

The EURO Input-Output panel is the most comprehensive and is only applied in sets with a built in satellite module.

In addition to the ECO version, the EURO version has:
- SCART 1: RGB-input
- SCART 3: RGB (100Hz) with V-sync and H-sync
- D2B bus for a smart card reader
- A cinch plug (ESI) with control signals for an audio installation

The video path of the EURO-I/O

To switch all video signals use is made of 2 identical IC's, the TEA6425, which are connected in parallel.

The input signals on one selector are:
- CVBS Tuner
- Y/CVBS Euroconnector 1
- C Euroconnector 1
- CVBS Euroconnector 1
- Y/CVBS Front input
- C Front input

The input signals on the other selector are:
- BB/CVBS Euroconnector 3
- Video Satellite module

The following output signals are available:
- Y/CVBS main picture
- C main picture
- Y/CVBS PIP
- C PIP
- BB/CVBS Euroconnector 3 out
- Y/CVBS Euroconnector 1 out
- C Euroconnector 1 out

The TEA 6425 has an internal Y-C adding circuit to make a CVBS output signal from YC (S-VHS)

Video path ECO-I/O

The ECO I/O panel has less input signals, with the video matrix limited to 1 IC as a result, the TEA6417.

The input signals are the same as those of the first selector of the EURO I/O but:
- The TEA6417 has no internal Y-C adding circuit, so that this is done externally and fed to an extra CVBS (Y+C) input.
- CVBS euroconnector 3 in.

Output signals are the same as those of the selectors of the EURO I/O but:
- BB/CVBS Euroconnector 3 out is not present.

Sound path EURO-I/O

Use is made of the TEA6430 to switch all sound sources. Two switching IC's are applied in the Euro version, one in the ECO version.

Input signals switch 1
- L/R Front-end
- L/R Front input
- L/R Euroconnector 1
- L/R Euroconnector 2
- L/R Euroconnector 3

Input signals switch 2 (not for the ECO version)
- L/R Front-end
- I/II Front-end
- L/R SAT module

Output signals
- L/R Loudspeakers
- L/R Headphones
- L/R Euroconnector 1 out

Dual languages
An extra feature of the EURO-I/O panel is that a choice can be made between language I and II for both loudspeakers and headphones separately because the front-end sound is supplied to 2 inputs.

RGB Path

ECO I/O
In sets with an ECO-I/O there is only one RGB input located on euroconnector 2. This RGB signal is carried to the PIP panel. The PIP-RGB/EXT-RGB selection is done on the PIP panel. The selected signal is sent to the video processor TDA9141 on the SSP, where it is converted to YUV. This YUV signal is carried via the feature box to the video controller.

EURO I/O
In sets with an EURO I/O there are 3 RGB inputs; on Euroconnectors 1, 2 and 3, whereby EXT3 is a 2Fh (100Hz) input. A RGB-switch IC (TDA8601) is located on the I/O panel at position 7815 that makes a selection between EXT1-RGB, EXT2-RGB or no RGB.
A second RGB-switching IC is located at position 7825 on the I/O panel that can switch through the RGB of EXT3.

If the RGB signals selected on the I/O panel is a 50Hz signal (EXT1 or EXT2) it is sent to the PIP panel. The PIP-RGB/EXT-RGB selection is made on the PIP panel. The selected signal is sent to the video processor where it is converted to YUV. This YUV signal is carried via the feature box to the video controller.
If the RGB signal selected on the I/O panel is a 100Hz signal it also travels to the PIP panel. Here the selection is now made between 100Hz RGB-EXT or 100Hz RGB-PIP. The now selected RGB signal is directly fed to the video controller.

8.7 The video and synchronisation processing [S5]

In the middle of the SSP the TDA9141 is placed. In this IC the video processing and synchronisation functions are integrated.
In the video-processing the CVBS-main from the I/O panel in PAL and NTSC are switched through to the comb filter where Y and C are separated. In SECAM the chrominance and luminance filters are located in the SECAM notch filter. An S-VHS signal with separate Y and C is switched directly to the chrominance decoder. In the decoder Y and C are converted to Y, R-Y and B-Y. The TDA9141 has an internal RGB/YUV switch to create the possibility to insert an external RGB signal into the YUV signal path. The switch is used to insert the RGB signal from the PIP module to create multi-PiP or from a euroconnector.

The synchronisation provides a 50Hz horizontal, vertical and sand castle pulse. The horizontal and vertical outputs of the TDA9141 are called HA and VA respectively.

1Fh and 2Fh in stead of 50Hz and 100Hz
A 50Hz video signal has a horizontal frequency of 15.625 kHz. This basic line frequency is also called 1Fh (one time the horizontal frequency). A 100Hz based video signal will be therefore be called a 2Fh signal.
In line with a 1Fh line frequency, also a 1Fv frame frequency is the base of a normal video signal.

In a conventional 100Hz set both 1Fh and 1Fv are doubled to 2Fh and 2Fv. In case of a 60Hz based signal doubling the frame frequency to 120Hz to improve the picture is less necessary. To make optimal use of the digital scan system however, in case of a 60Hz based signal (eg. NTSC-M), the horizontal frequency 1Fh is doubled to 2Fh, but the vertical frequency is kept 1Fv. This display mode (2Fh, 1Fv) is called progressive scan and it results in a very stable non-interlaced picture. At all 60Hz based video signals, the set switches to progressive scan.

A 2Fh display sync pulse for PIP and TXT is derived from the 100Hz flyback pulse and generated by IC7380.

The Y, R-Y and B-Y signals are converted to 2Fh (100Hz) in the feature box. The synchronisation signals are also doubled in the featurebox. The outgoing sync signals are called HD and VD. These signals are fed to the deflection processor (DDP) on the large signal panel.

In the video-control circuit, the TDA4780 on the SSP, the Y, U and V signals are converted to RGB. With a first switch the 100Hz PIP picture can be mixed with the main picture. With a second switch TXT or OSD can be mixed. The PIP picture can interrupt this, making a PIP picture within TXT. The switched RGB signals undergo the necessary adjustments such as brightness, contrast, saturation,, black-stretch and blue-stretch.

Before the RGB signals are fed to the RGB amplifiers the signals pass the VCI panel. Here R, G and B are delayed for the correct operation of SCAVEM. The soft clipper limits the max. drive of the picture tube.

Synchronisation

The video processor TDA9141 provides vertical and horizontal sync pulses VA and HA that are synchronised with the incoming CVBS signal. These pulses are used in the Feature box, on the PIP panel and on the TXT panel. The frequencies are doubled in the Feature box and are synchronous with the 100Hz picture. The outgoing pulses, HD and VD are fed to the Digital Deflection Processor (DDP) that supplies the horizontal and vertical drive pulse and the 100Hz (2Fh) sandcastle. The vertical pulse VD from the featurebox is also used for PIP and TXT.
The 100Hz flyback pulse is fed to the video processing part and converted there into the 100Hz display pulse (2Fh). This is used by PIP and TXT to determine the location of PIP and TXT.

When no CVBS is offered to the video processor, the VA and HA pulses are then switched off in the video processor. The pulses HD and VD are then generated by the featurebox.

8.8 The feature box [F]

The Feature box has the following functions:
- Digital scan for 50Hz systems (PAL/SECAM BGLL') (100Hz)
- Progressive scan (525 lines per frame) for 60Hz systems NTSC-M) (60Hz non-interlaced)
- Digital CTI
- Digital luminance peaking
- Multi PiP processing
- 1 clock system
- Movie Phase Detection
- DNR Function
- Line Flicker Reduction
- Vertical en Horizontal Zoom function
- AI interface to add extra digital circuits, for example PALplus

The feature box is adjustment free.
At introduction of GFL FBX3 will be supplied, later on FBX4 will be introduced.

8.9 Teletext [AQ and S7]

The Teletext function is situated on a separate panel behind the SSP, but on later versions it will be fitted on the SSP board. The main part of the Teletext function is built in the SAA5270 Teletext processor. In the GFL chassis the teletext memory is 512kB with an extension possibility to 1MB. The Teletext decoding on a 50Hz level is synchronised with the line and frame synchronisation pulses from the video processor. The Teletext display part on 100Hz level is synchronised via the synchronisation signals coming from the featurebox and the horizontal flyback pulses. The OSD information and the user menu's are also generated via the Teletext processor. The RGB and blanking outputs of the SAA5270 are directly fed to the RGB and blanking inputs of the video controller. It will be clear that the Teletext data does not pass the featurebox. If the Teletext function is defective, no OSD or menu's can be generated. Also the service menu's will remain hidden.

8.10 The sound processing [S3 and AY]

The main sound channels left and right, coming from the source selection are fed to the sound processor TDA9860. This sound processor can be present on the small signal panel on the right hand side, but can also be placed on the Audio Featuring Unit in case of sets equipped with the Dolby system. In this case a connector is placed on the SSP at the position of the sound processor.

The Audio Featuring Unit [Z]

The Audio Featuring Unit or also AFU, is an extension to the basic sound processing of the GFL chassis. Besides the normal sound processing features of the TDA9860 which is present on the AFU, the AFU offers a graphic equalizer and Dolby Prologic sound decoding, and surround sound. If Dolby Prologic decoded software is offered, out of the incoming left and right signals, the four Dolby channels are extracted. The four Dolby channels are Left, Right, Centre, and Surround or L, R, C and S.

The surround channel is only one channel but it is played via two loudspeakers, connected in series. The AFU can also be equipped without Dolby Prologic. The equaliser function remains then.
Via the noise generator on the AFU panel (IC7800) which can be switched on via the sound menu, the four sound output channels can be tested easily.

8.11 The Digital Deflection Processor TDA9155 (DDP) [J and L]

The DDP panel is located on separate board on the LSP. This board is also called the Geometry panel.
The DDP has the following functions:
- Synchronisation
- Drive of the frame, line and east/west output stages
- Protection

All geometry adjustments are performed via I^2C and stored in the EAROM on the SSP (except DC shift).

Line drive

The horizontal drive pulses (pin 12 IC7315) for the line output stage are derived from the HD input pulses (pin 4 IC7315) from the feature box. For control the horizontal and vertical flyback pulses are fed back to pins 16 and 17.

The sandcastle generator (2 levels)

The sandcastle generator in the DDP provides line and frame blanking pulses at a level of 2.5V and burst key pulses at 4.7V. The sandcastle is used by the video controller TDA4780.

Frame driver

The DDP supplies a differential current to pin 23 and pin 24 that is converted by IC7335 to a voltage. The DC setting of IC7335A is determined by TS7342. Pin 3 of IC7335 is fixed at 2.5V via a voltage divider (R3341 and R3342) and an emitter follower. VD NEG is the frame drive pulse to drive the +input of the frame output stage (7260) on the LSP.

E/W driver

The DDP provides a full E/W drive signal at pin 19. The signal is fed via op-amp IC7335B to the E/W output stage at the LSP. The E/W output stage is built around FET 7432. Feedback from the E/W output stage is done via 3432 and 3336 (EWD signal).

The following geometry corrections are realised by the east-west drive: Picture width, Trapezium, Parabola (pin-cushion) and Corner correction. These settings can be adjusted in the service menu.

8.12 The serial switch [L1]

The serial switch is a switching FET 7480 in the +141V supply line from the FFS to the line output stage.
The purpose of the serial switch is:

To switch off the line output stage:
- on flash detection.
- in stand-by and protection

The serial switch is started via the 141V, R3480 and C2481. After the RC delay the gate of TS7496 becomes positive causing it to conduct. The line output stage can now start. In this condition TS7480 is not yet fully saturated, the gate voltage is still too low. For this reason the +200V from the line output stage is also coupled to the gate via D6481, R3482, R3492 and R3481 resulting in a higher gate voltage and a saturated FET. This causes the dissipation in TS7480 to be reduced to a low level. D6480 limits the GS voltage to ± 10V.

Via R3400, R3402 and R3403, the reference current generator of the DDP is supplied.

The serial switch can be opened externally by two signals:
1. *SLOW-DOWN*: This is the direct line from the microprocessor. The line output stage is switched off to stand-by via this line.
2. *FAST-DOWN*: This line is used to switch off the line circuit in case of an urgent protection, without the help of the microprocessor.

8.13 The line output stage [L1]

The DDP supplies the control pulse for the line output stage via the H-drive signal. When the H-drive pulse is low TS7409 blocks making TS7406 conduct. This results in a linearly increasing current flowing through S5406 and a rectangular voltage across S5406. At this moment the base of transistor TS7414 is negative, causing the transistor to block.

After a certain time the base of TS7409 becomes high (via the DDP), TS7406 blocks. The Drain voltage of TS7406 increases strongly. The voltage on the secondary side of TS5406 reverses causing a base current to the line transistor TS7414. Due to the storage time of TS7414, TS7406 cannot release its energy immediately resulting in a very high peak voltage at the drain of TS7406. This voltage peak is absorbed by C2406, R3405 and R3406. S5413, R3414 and C2414 ensure the rapid switch-off of the line output transistor.

Limiting LOT power

After an urgent protection or a flash, the FAST-DOWN line becomes active, making TS7407 conduct. The result of this is that the primary voltage on the driver transformer S5406 is limited when TS7406 is not conducting. The secondary voltage will become lower, causing a limitation of the base current of the line transistor. The current through the line transistor will drop sequentially. The LOT power drops rapidly.

If the LOT operates at lower power, the power dissipation the line transistor will increase, which would adversely influence operational reliability. For this reason a protection circuit is added, built up around TS7424. During normal operation C2425 is charged via R3425 at the moment that TS7406 conducts. During the blocking of TS7406, TS7424 is conducting, which causes C2425 to discharge. In this situation the voltage in C2425 can never reach the protection level. At the moment that the FAST-DOWN line becomes high, TS7407 conducts causing TS7424 to block. After a certain time C2425 is charged to the protection level, through which the set is switched to protection mode and the power supplies are switched off.

The voltages generated by the LOT

The line output stage supplies various secondary voltages:
- SCAVEM supply via pin 7 of the LOT
- +13V LOT to the picture tube panel via pin 8 of the LOT
- -15V LOT to the DDP and the scavem circuit
- The filament of the picture tube between pins 11 and 12
- The +200V for the RGB output amplifiers is supplied via pin 6
- The DC shift circuit is supplied via pins 4 and 6
- The EHT is produced via a diode split. The focus and the VG2 voltage derived from the EHT. The focus and VG2 potentiometers are integrated in the transformer

The beam current flows through R3476 from the 141V. Components R3468, 3464, 3463, 3452, 3451, 3450, D6450 and C2405 determine the EHT info adjustment characteristics. On an increasing beam current the voltage on transformer pin 10 and across C2455 drops. To improve the focus on a 16:9 picture tube a dynamic focus is applied (DAF). A parabola on line frequency with the correct amplitude is superimposed on the focus voltage.

8.14 Protection structure (Fig. 8.4)

The GFL protection diagram shows the schematics of the protection system.
Via 4 switches the system can be activated.

To protect the loudspeakers de AUDIO amplifier can switch off the FSS main supply.
→ Disconnect this amplifier to determine if the defect is in this audio amplifier.

Two other switches are controlled simultanuously by the micro processor via the stand-by signal. They can switch the FFS and AUX1 to stand-by mode. This is always done in case of protection.

Via the series switch the horizontal defelection stage can be switched on and off, Normally the slow down signal (SD) controls the series switch, but in case of an urgent alarm the fast down signal (FD) switches off the line circuit immediately.
An urgent alarm is reported to the microprocessor via the protection line (PROT).

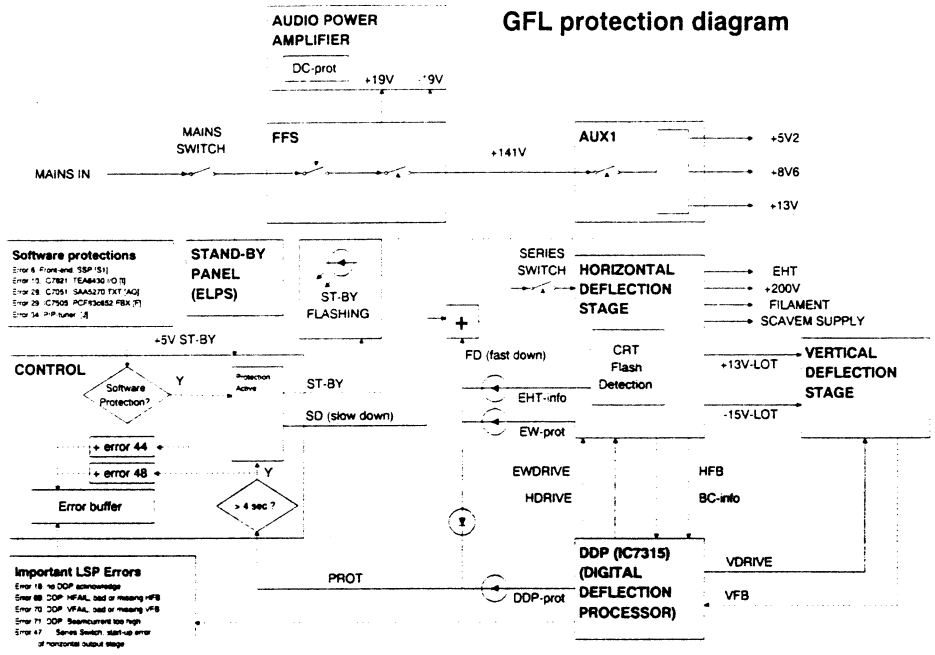


Fig. 8.4

The protection output of the DDP is also connected to this line. If the protection line is active for 4 seconds, the micro processor switches off both supplies via the stand-by signal (ST-BY). At the same time error 48 is placed in the error buffer and the stand-by LED starts flashing. With the DST the error number can be read.

The DDP can detect 3 errors:
- HFAIL bad or missing HFB pulses result in error 69
- VFAIL bad or missing VFB pulses result in error 70
- Overcurrent too much beamcurrent results in error 71

The East-West protection directly switches off the series switch via the Fast Down signal. The PROT line is also pulled high, so that the micro processor can take over the protection handling.

Measuring the E/W protection
Pin 7 of IC7360 on the DDP panel will become approximately 8V for a few seconds if the E/W protection is active.

The E/W protection becomes active when:
- Flyback capacitor C2419/C2429 is open
- Diode D6417 is short circuited
- Linearity corrector L5428 is open
- Horizontal deflection coil is open
- S-correction capacitor C2433 is open
- Capacitors C2421/C2422 are short circuited
- Bad solder connections in the line deflection part

During start-up the series switch is checked with help of the DDP. If the switch does not work properly, error 47 is generated.
Attention: error 47 is also generated at a failing start-up procedure of the horizontal defelection stage. So if error 47 occurs, further investigation is necessary.

A special protection is the EHT-info protection. After a flash in the picture tube, a high beam current peak, this protection switches off the line circuit via the fast-down signal. As this effect is only a temporarely effect, the horizontal circuit is started up again immediately. This protection is not registrated by the micro processor. It takes less than a second to start up again.

Software protection is performed on 5 IC's. They are mentioned in the protection diagram. If one of these does not give an acknowledge, the set switches to stand-by and the LED starts flashing. In this case error 44 is placed in the buffer.
If error 44 together with one of the 5 IC's is in the error buffer, this IC might be defective.
If however, a lot of errors are in the error buffer there will probably a supply problem or a general I^2C problem.
After error 44 is in the placed in the buffer, the error logging stops. So error 44 will always be the last error reported.

Note: At start-up the TDA9141 is checked after the DDP is checked for acknowledge. If the SYNC IC TDA9141 on the SSP (IC7352) is not answering, further start-up is useless, the start-up is terminated, and the set switches to stand-by. The TDA9141 error 15 is placed in the error buffer.

The PROT line is a 'wired OR' of a the following protection circuits:

- The DDP PROT output
- The E/W hardware protection
- The series switch test circuit (only active during start -up)

There are three protections which are not generated by the processor, the so called hardware protections.

The first one is the East/West Protection, which detects a too high current through the East/West power stage around TS7432 on the large signal panel. A too high current through the East/West stage can be caused by a defect component in the line deflection circuit, for example a disconnected line deflection coil or an open fly back capacitor. This hardware protection generates the 'Fast Down' signal which switches off the line circuit immediately via the series switch. At the same time the micro-processor is informed about the protection via the PROT line and overrules the hardware protection by the software protection.

The second protection becomes active in case of a very fast beam current peak in the picture tube. This happens during a flash in the picture tube. The so called 'flash protection' prevents the line output stage from too high currents in the primary side and is only active for a very short moment. After a flash the 'Fast-down' signal switches the line circuit off via the series switch and immediately on again. This event is not reported to the micro processor. After a flash the picture will be blanked for less than half a second.

The third protection is the DC protection which is originated at the audio amplifier panel. This protection is connected directly to the stand-by line of the FFS. Via this protection the FFS can be switched off immediately. By disconnecting the audio amplifier this protection can be eliminated easily.

In case the DDP makes the PROT line high the status register of the DDP will then contain information concerning the reason for protection. After the microprocessor has read the status register via I^2C, the PROT line is reset and the status register erased.

In case the error is repeated the PROT line becomes high again and the status register is filled.
The status register of the DDP can report following errors:

- Error 69 HFAIL, HFB pulses missing or in bad shape
- Error 70 VFAIL, VFB pulses missing or in bad shape
- Error 71 Overcurrent, Beamcurrent is too high (=EHT INFO)

E/W-protection

The east-west correction current is measured on the LSP via 2 precision resistors (R3446 and R3447). When an error occurs in the line output stage this current increases. The detected voltage is offered to the DDP panel.
The -input of IC7360 is DC adjusted to 1V. When the voltage on the +input of IC7360 becomes greater than 1V, pin 7 of IC7360 becomes high, and the PROT output becomes high via D6319. The FAST-DOWN becomes high via D6364.
The E/W protection can be measured easily at start up. Pin 7 of IC7360 on the DDP panel becomes 8V in case of protection. The 8V voltage remains for a few seconds.

Flash protection

On a flash (e.g. a flash-over in the picture tube) the EHT info signal becomes low. If the voltage becomes lower than 33V + 0.6 -7.4V = -26V, TS7390 conducts. Via an RC loop consisting of R3388 and C2391, C2391 is rapidly charged and then slowly discharged via R3389 and R3390 (20ms). The RC constant determines the conducting time of TS7391 and TS7392. Via D6364 the FAST-DOWN line becomes high resulting in the line output stage is switched off for a short time.

Serial switch protection

To prevent the line output stage from being supplied by the 141V before the DDP is initialised an extra detection circuit has been added to determine a proper working of the switch.

After the DDP is started, the series switch is kept closed for a while by the microprocessor. During this time measurements for the presence of flyback pulses are made. If there are fly back pulses, there is a short circuit in the switch.

- No flyback pulses: pin 1 of IC7360 becomes high and PROT becomes high via D6334. Via this path the microprocessor is informed that the serial switch is OK.
- Flyback pulses: pin 1 of IC7360 becomes low. PROT remains low. Via this signal the microprocessor is informed that the serial switch is not OK. The set switches into stand-by. Error 47 (series switch) is written in the buffer.

8.15 The dealer service tool (DST)

Together with the GFL chassis a dealer remote control is introduced, the RC7150 which is called the Dealer Service Tool or DST.
The RC7150 is a remote control for the dealer and the servicer.

Installation features for the dealer

The dealer can use this remote control for programming the TV-set with presets, TV-settings, Dish settings and Logo's. Not only the GFL sets can be programmed with it, but also a lot of existing sets like FL, GR2, G90B, G110 and the new Philips VCR series using the so called NORA deck.

One of the innovative features of the Dealer Service Tool is the way in which it is programmed. A complete list of presets can simply be downloaded from the GFL into the Dealer Service Tool.
To make this download possible, a two way communication link, the so called "dealer link", is set up between the RC7150 and the GFL TV-set.
To establish this link, the GFL sets are equipped with an additional Infra-red transmitter LED and the RC7150 has an Infra Red receiver on board.
The Dealer Link however only works on short distance, up to 10 cm or 4 inches.

For explanation of the installation features of the DST, the directions for use are recommended.

Diagnose features for the servicer

Entering the service modes
The GFL sets can be put in the service alignment mode and the service default mode by connecting two pins on the SSP. With the RC7150 this can also be done:

- Press the "ALIGN" key to enter the Service Alignment Mode.
- Enter the password '3-1-4-0' and press OK.
- Press the "DEFAULT" key, to enter the Service Default Mode. In the service default mode the set is put in a default stage regarding tuning frequency, picture settings etceteras.
- Press the "DEALER" key, to enter the Dealer Mode. In the dealer mode some settings can be changed in order to customize the set.

The Service Default Mode can be switched off by switching the set off.

Reading error codes from the error buffer

If an error has been detected by the GFL chassis, protection mode might be activated or the set is put back into stand-by. Without the presence of a picture the errors can be read by the DST, as long as the microprocessor is still active (a LED must light up).

To transmit the errors to the DST:

1. Press the "DIAGNOSE" key.
2. Press "1" to view the last error detected.
3. Hold the DST 5 to 10 cm from in front of the stand-by LED of the set (the IR-sending LED of GFL is located near the stand-by LED).
4. Press the "OK" key.

The error is represented by a 3 digit number.
The 3 digits on the DST are displayed sequentially, with a pause before it is repeated. The digit after the pause is the 1st digit.
If the display reads 2 - 4 - 7, the error code is 247.
To read other error codes, press "DIAGNOSE" and one of the other digit keys.
If the DST cannot communicate to the GFL in a proper way, ERROR 2 is shown in the display. Trying again by changing the DST position a little bit might often help.
If the error buffer of GFL is empty, no errors are displayed by the DST, the display remains blank.

8.16 Faultfinding and repairing the GFL chassis

With most defects the GFL will give no picture and no sound.

Switch on the set via the mains-switch.
If the LED's behave properly it is likely that the microprocessor is OK.

The green LED shows that both FFS and AUX1 supplies are started up. If, after a few seconds, the stand-by LED is illuminated an error is detected. Now both supplies are in stand-by position again.
The stand-by LED can also start flashing. In this case protection became active. Restart is only possible via the mains-switch or the internal service pin's.

Via the DST we can read the error codes of the error buffer.
In case error 48 is displayed, the protection circuit was active and initiated by the PROT-line. Reading the next error code can give other information about the defect.

In the GFL protection diagram the most important errors are indicated. The faultfinding-table can help to find the defective function.

If, for example, the second error is 69, H-FAIL, which is detected by the DDP because the HFB pulses do not have a correct shape, we know that the line circuit is not working properly. By measuring some key components in the line deflection circuit, the defect can be located. With the Line Repair Kit the defect can be repaired.

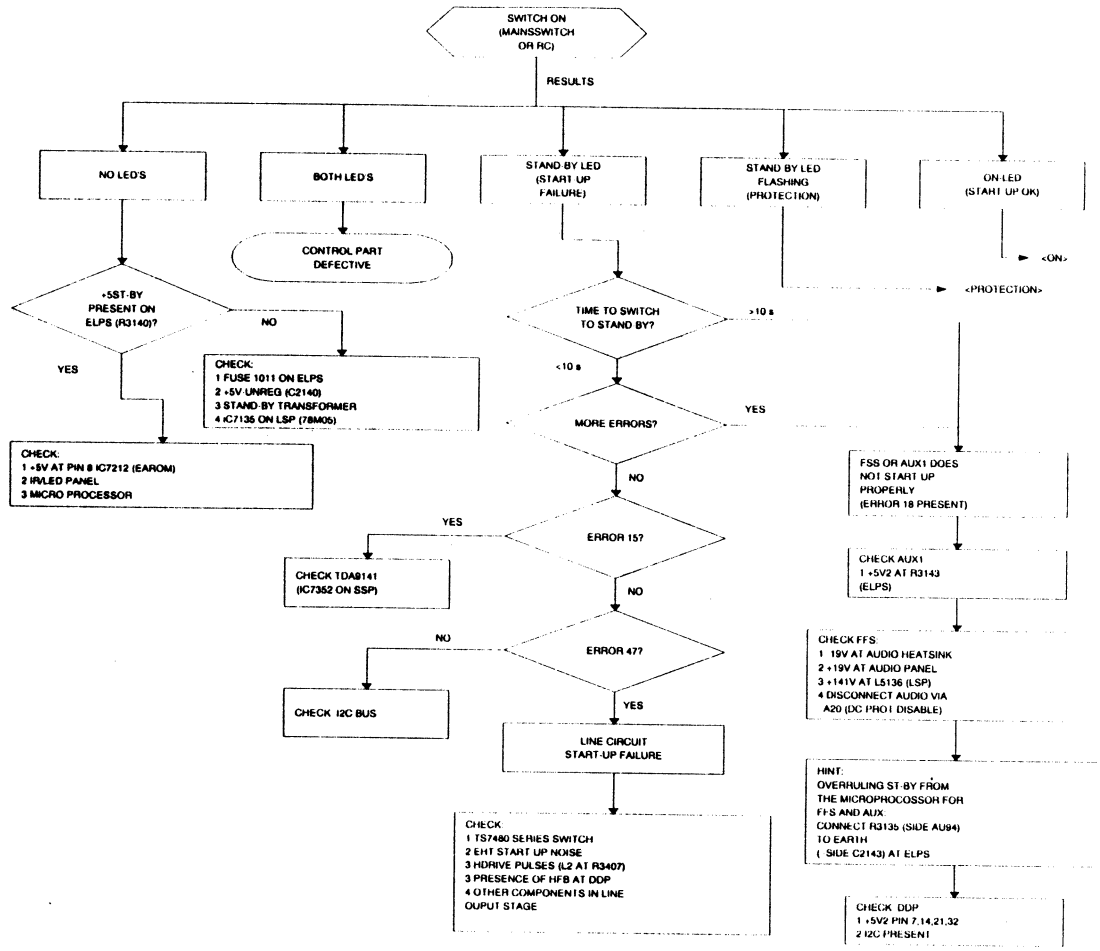
If the supply is hickuping then it might be short circuited.
To find out if the line output stage generates the short circuit we measure the DC resistance of the series switch. Measure between coil 5126 and bridge wire 9453 between R3440 and R3445.

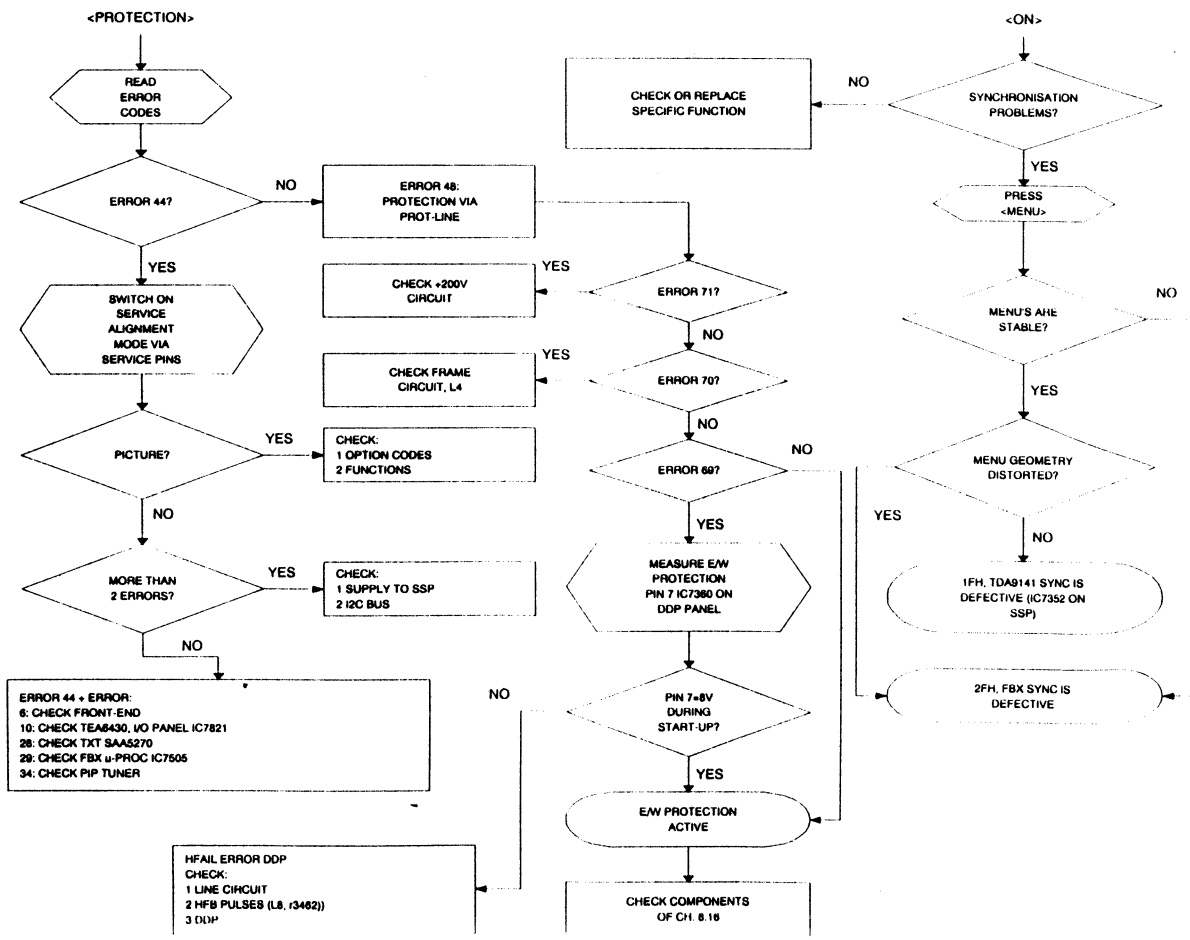
If this is a low resistance we know that the switch is defective. If the switch is defective, there must be another short circuit. Most likely something else caused the defective switch. Via the line repair kit, we can repair most of the line circuit defects.

Note: If the line transistor 7414 goes defective, then also the switch will become defective.

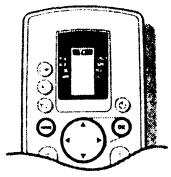
Error 18 indicates that the DDP does not communicate to the microprocessor.
→ Most likely the FFS or AUX1 supply is not working or short circuited.
We can easily check the operation of the FFS is on the audio amplifier panel during start-up.
At the Stand-by panel at resistor 3143 we can check the +5V2 of the AUX1 supply.
If necessary we can repair one of them via the FFS or AUX1 repair kit.

Error number	Description of error
0	No error
1	I²C, IC7212, SSP [S8] ST24C02AB1) (not used)
2	I²C, IC7212, SSP [S8] ST24C04B1) (not used)
3	I²C, IC7212, SSP [S8] ST24C08B1) (not used)
4	I²C, IC7212, SSP [S8] ST24C16B1)
5	I²C, IC7204, SSP [S8] HEF4094)
6	I²C, front-end, SSP [S1] FQ9xx)
7	HEF STROBE, front-end, SSP [S1] (FQ9xx) (not used)
8	I²C, IC7823, I/O [I] (TEA6425)
9	I²C, IC7824, I/O [I] (TEA6425)
10	I²C, IC7821, I/O [I] (TEA6430)
11	I²C, IC7822, I/O [I] (TEA6430)
12	I²C, IC7818, I/O [I] (MSM6307)
13	I²C, IC7814, I/O [I] (TMP47C103N)
14	I²C, IC7880, I/O [I] (TEA6422)
15	I²C, IC7352, SSP [S5] TDA9141/9161)
16	I²C, IC7500, SSP [S6] TDA4780)
17	not used
18	I²C, IC7315, DDP (Geometry) [J] (TDA9155)
19	I²C, IC7600, SSP [S2] (TDA9840)
20	I²C, IC7550, NICAM [G] (SAA7282)
21	I²C, IC7650, SSP [S3] (TDA9860)
22	I²C, IC7820, AFU [Z] (TDA9860)
23	I²C, IC7840, AFU [Z] (TEA8360)
24	not used
26	I²C, IC7746, AFU [Z] (PCF8574)
27	I²C, IC7601, I/O [U] (PCF8574)
28	I²C, IC7051, TXT [S or AQ] (SAA5270)
29	I²C, IC7505, FBX [F] (PCF83C652)
30	PCF8574 (16:9 compressor)
31	TDA8443A (16:9 compressor)
32	I²C, IC7788, PIP [P] (SDA9288)
33	I²C, IC7788, PIP [P] (SDA9288)
34	I²C, PIP tuner [P]
35	not used
36	I²C, IC7860 PIP [P] (PCF8574)
40	I²C, PCF83CE652 (cardreader)
41	I²C, PCF83CE654 (satellite)
42	I²C, IC7900, I/O [I] (PCF8574P)
43	I²C, IC , [G] (PCF8574)
44	supply protection error (front-end, IC7051 teletext, IC7505 featurebox, PIP tuner and IC7821 I/O)
45	not used
46	not used
47	+140V series switch protection
48	protection (prot-line)
49	I²C, IC7823, I/O [I] (TEA6417)
50	I²C, IC7788, PIP [P] (SDA9288)
60	BSCS microprocessor (satellite)
61	PCF8574 (3D combfilter)
62	PCF8574 (NTSC to Muse)
65	PCF8574 (HDI)
66	TDA4672 (PSI)
67	TDA8444 (Video Improvement Panel)
68	I²C, AI without FBX, (TDA9170)
69	hfail, horizontal deflection error (DDP protection)
70	vfail, vertical deflection error (DDP protection) *
71	overcurrent (DDP protection)
72	overvoltage (DDP protection) (not used)


SWITCH ON (MAINSSWITCH OR RC)
RESULTS
NO LED'S
BOTH LED'S
STAND BY LED (START UP FAILURE)
STAND BY LED FLASHING (PROTECTION)
ON LED (START UP OK)
CONTROL PART DEFECTIVE
<ON>
<PROTECTION>
+5ST-BY PRESENT ON ELPS (R3140)?
NO
YES
CHECK:
1 FUSE 1011 ON ELPS
2 +5V-UNREG (C2140)
3 STAND-BY TRANSFORMER
4 IC7135 ON LSP (78M05)
CHECK:
1 +5V AT PIN 8 IC7212 (EAROM)
2 IR/LED PANEL
3 MICRO PROCESSOR
TIME TO SWITCH TO STAND BY?
>10 s
<10 s
MORE ERRORS?
YES
NO
ERROR 15?
YES
NO
CHECK TDA9141 (IC7352 ON SSP)
ERROR 47?
NO
YES
CHECK I2C BUS
LINE CIRCUIT START-UP FAILURE
CHECK
1 TS7480 SERIES SWITCH
2 EHT START UP NOISE
3 HDRIVE PULSES (L2 AT R3407)
4 PRESENCE OF HFB AT DDP
5 OTHER COMPONENTS IN LINE OUPUT STAGE
FSS OR AUX1 DOES NOT START UP PROPERLY (ERROR 18 PRESENT)
CHECK AUX1
1 +5V2 AT R3143 (ELPS)
CHECK FFS:
1 19V AT AUDIO HEATSINK
2 +19V AT AUDIO PANEL
3 +141V AT L5136 (LSP)
4 DISCONNECT AUDIO VIA A20 (DC PROT DISABLE)
HINT:
OVERRULING ST-BY FROM THE MICROPROCOSSOR FOR FFS AND AUX:
CONNECT R3135 (SIDE AU84) TO EARTH
(SIDE C2143) AT ELPS
CHECK DDP
1 +5V2 PIN 7,14,21,32
2 I2C PRESENT


<PROTECTION>
READ ERROR CODES
ERROR 44?
NO
YES
SWITCH ON SERVICE ALIGNMENT MODE VIA SERVICE PINS
PICTURE?
YES
NO
MORE THAN 2 ERRORS?
YES
NO
CHECK:
1 OPTION CODES
2 FUNCTIONS
CHECK:
1 SUPPLY TO SSP
2 I2C BUS
ERROR 44 + ERROR:
6: CHECK FRONT-END
10: CHECK TEA6430, I/O PANEL IC7821
28: CHECK TXT SAA5270
29: CHECK FBX u-PROC IC7505
34: CHECK PIP TUNER
ERROR 48: PROTECTION VIA PROT-LINE
CHECK +200V CIRCUIT
YES
CHECK FRAME CIRCUIT, L4
YES
ERROR 71?
YES
NO
ERROR 70?
YES
NO
ERROR 69?
NO
YES
MEASURE E/W PROTECTION PIN 7 IC7360 ON DDP PANEL
PIN 7=8V DURING START-UP?
NO
YES
E/W PROTECTION ACTIVE
CHECK COMPONENTS OF CH. 8.16
HFAIL ERROR DDP
CHECK:
1 LINE CIRCUIT
2 HFB PULSES (L8, r3462))
3 DDP
CHECK OR REPLACE SPECIFIC FUNCTION
NO
<ON>
SYNCHRONISATION PROBLEMS?
YES
PRESS <MENU>
MENU'S ARE STABLE?
NO
YES
MENU GEOMETRY DISTORTED?
YES
NO
1FH, TDA9141 SYNC IS DEFECTIVE (IC7352 ON SSP)
2FH, FBX SYNC IS DEFECTIVE

9. Directions for use

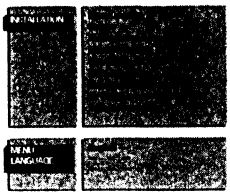


Select the menu language

You can now choose which language the menus are presented in.
When you switch on your set for the first time, the MENU LANGUAGE automatically appears on the screen.
See the explanation on your screen. Alternately the explanation automatically appears in the different languages.
If the MENU LANGUAGE menu does NOT automatically appear on the screen, proceed as follows :

- Press MENU on the remote control.
- ▹ The MAIN MENU appears on the screen.

- Keep the key pressed and select INSTALLATION.
- ▹ INSTALLATION lights up.
- Press OK.
- ▹ The INSTALLATION menu appears and Menu Language lights up.
- Press OK.
- ▹ The MENU LANGUAGE appears.
- Select the language of your choice with the keys , , ▶ or ◀ and press OK.
- ▹ The INSTALLATION menu reappears.
  From this point on, all menus are presented in the language of your choice.



Have you pressed the wrong key ?
Press OK again and make a new choice.

Select Country

- Press the keys or to select Country.
- ▹ Country lights up.
- Press OK.
- ▹ The menu COUNTRY appears.
- Select the country where you are now located with the keys or and press OK.
  Select Other when none of the countries applies.
- ▹ The INSTALLATION menu reappears.

Store TV channels

This can be done in two different ways : automatically or manually.

Automatic installation ..... **or** **Manual installation**

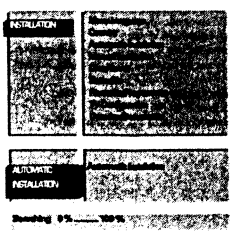
All TV channels are searched for and stored automatically. As far as it is transmitted by the cable company or a TV channel a programme number and a name is attributed automatically as well and filled in in the programme list.
If you wish the order of programme numbers and names of stored TV channels can be modified afterwards.
Follow very closely and step by step the instructions of the Automatic Installation.

With manual installation it is possible to select whether TV channels are searched by frequency or channel number.

Follow very closely and step by step the instructions of the Manual Installation procedure.
You must go through every step.

Go on to page 7.

Automatic installation



- Select Automatic Installation with the keys or and press OK.
- ▹ The menu AUTOMATIC INSTALLATION appears.
- Press OK again.
- Press the keys ◀ or ▶ to select On.
- ▹ The message Searching appears as the TV searches for all the channels available in your area.

The automatic installation can be interrupted by pressing the MENU key.

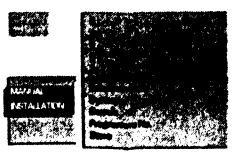
- ▹ Every time a TV channel is found it is automatically stored under the next free programme number in the programme list.
- ▹ The message Ready appears on the screen when the automatic installation is complete.
  If a cable system or a TV channel transmitting a teletext page with the frequencies and programme names of all the TV channels which can be received, is detected, the search is stopped and a programme list appears.
  The programme list is automatically filled with all the programme numbers and names of the TV channels transmitted.

It is possible that the cable company or the TV channel displays a broadcast selection menu. Layout and items are defined by the cable company or the TV channel. Make your choice of the presented possibilities with the keys or and press OK.

- Press MENU.
- ▹ The INSTALLATION menu reappears.

Go on to page 9.

Manual installation



- Select Manual Installation with the keys or and press OK.
- ▹ The menu MANUAL INSTALLATION appears.
  In the left upper corner of the screen a programme number, a system, a frequency or possibly a channel number are displayed.
- ▹ Selection Mode is only present and lights up if the country you selected in the COUNTRY menu also offers the channel option.
  In this case you can choose either channel or frequency mode.

- Press the keys ◀ or ▶ to select frequency, C-channels (aerial channels) or S-channels (broadcast by a cable company).

❶ Select the TV system

Television pictures are not broadcast in the same way in all countries. We speak of different television systems (PAL, SECAM, NTSC,...).

- Select System with the keys or .

You have your own aerial ..... **or** **You are connected to a cable system**

- Select the country or part of the world from where you want to receive the TV channel with the keys ▶ or ◀.

- Select the country or part of the world where you now are located.

Go on to 2.

❷ Search for a TV channel

- Select Search with the keys or and press OK.
- ▹ The TV searches for a channel.
- ▹ The frequency or the channel number increases until a TV channel is found. Dependent on the choice you made in the selection mode the searching stops at a frequency or at a channel number.
- ▹ In the bar, which appears briefly at the bottom of the screen, the broadcaster may transmit its programme name or the programme title being broadcasted or another message.

Is the reception poor ?
You may be able to improve the reception of picture and sound of a TV channel, by adjusting the frequency with the P - or + key on the remote control. The frequency is adjusted in the block shown in the upper left corner of the screen.
Go on to 3 if you want to store the channel that has been found.

Do you want a different channel ?
- Press OK again to restart the search.

No channel found ?
- Interrupt the searching by pressing the keys or or the MENU key.
  Check that you have selected the correct TV system or that the aerial is connected properly. See Tips p. 37.

Direct selection of a TV channel

If you know the frequency, or the C- or S-channel number, it can be entered directly with the digit keys on the remote control and in this way call up the TV channel.
Ask for a list from your cable company or dealer, alternatively consult the Table of frequencies on the inside backcover of this handbook.

- Select Search with the keys or .
- Enter the 3 digits of the desired frequency or the 2 digits in case of C-or S-channels.
- For frequencies under 100 MHz, first enter a 0. For example : 063.
- ▹ The frequency is automatically finetuned.

Have you entered a wrong number ?
First complete the frequency or the channel number with arbitrary numbers and then start again.

Go on to 3.

❸ Enter the programme number

Now assign a number of your choice to the TV channel you have located. In this way you decide the order of all your TV channels.

- Select Programme Number with the keys or .
- Select with the keys ◀ or ▶ or with the digit keys the desired programme number.

Go on to 4.

❹ Store steps 1 to 3

Now the steps 1 to 3 must be stored in the memory.

- Select Store with the keys or and press OK.
- ▹ Stored appears briefly at the bottom of the screen.
- ▹ The programme is stored in the programme list after the message has disappeared.

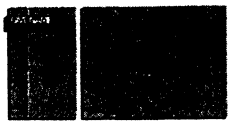
repeat If you want to store another TV channel.
- Repeat ❶ to ❹

If you are connected to a cable system.
- Begin immediately with ❷. You have already selected the TV system in ❶ for all channels.

end If you have finished storing TV channels.
- Press MENU.
- ▹ The INSTALLATION MENU reappears.

49A

Enter or modify a programme name



It is possible to change the name stored in the memory or to assign a name to a TV channel which has not yet been entered. A name with a maximum of 5 letters or numbers can be given to the programme numbers 0 to 99. For example SUPER, BBC1,...
Between 99 and 0, you can also name any peripherals that are connected.

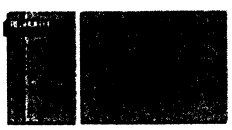
- Select **Give Name** with the keys or and press **OK**.
- ▷ The **GIVE NAME** menu appears.
- Select the TV channel to be modified or assigned a name with the keys , , ▶ or ◀ and press **OK**.
- ▷ A block appears on the first position of the name.
- Select with the keys ▶ or ◀ the position of the letter or number you want to change or to enter.
- Select with the keys or the letter or number you want to enter or to correct. Spaces or other special characters are located between Z and A.

Did you fill in a wrong letter or number ?
Select with the keys ▶ or ◀ the position of the letter or number you want to modify.
Select with the keys or the correct letter or number.

When the complete name is filled in.
- Press **OK**.
- Select another TV channel to be modified or assigned a name with the keys , , ▶ or ◀ and press **OK**.
- Repeat as described above.

When you have finished entering or modifying programme names.
- Press **MENU**.
- ▷ The **INSTALLATION** menu reappears.

Reshuffle the programme list



According to your preference you can change the order of the stored TV channels.
When you are satisfied with the order of the programme list, go to page 10.

- Select **Reshuffle** with the keys or and press **OK**.
- ▷ The menu **RESHUFFLE** appears.
- Select the TV channel you want to change the programme number of with the keys , , ◀ or ▶ and press **OK**.
- Use the keys ◀ or ▶ to select another column of the programme list.
- ▷ The programme number and the name of the TV channel appear in a black block.
- Use the keys , , ▶ or ◀ to move to the number where you want to locate the TV channel.
- Press **OK**.
- ▷ The TV channel moves to the selected programme number.
  The TV channel which was located on that position automatically moves to the programme number of the TV channel you have modified.
- Repeat this for all the other TV channels you want to swap.

When all the TV channels are allocated as you like.
- Press **MENU**.
- ▷ The **INSTALLATION** menu appears again.

Select Favourite TV channels

During the installation all the stored TV channels have automatically been placed into the favourite list.
This will make selection of only your favourite TV channels a lot easier and faster.
In the Favourite Programmes menu you can indicate for each TV channel if you want to keep that TV channel as a favourite.
You can also do this for a programme number reserved for the programmes you receive from your decoder.

After leaving the installation you can quickly run through the TV channels by holding the P - or + pressed down, only those TV channels which are in the favourite list will be displayed. The non-favourite TV channels can still be selected with the digit keys.

- Select **Favourite Programmes** with the keys or and press **OK**.
- ▷ The **FAVOURITE PROGRAMMES** menu appears.
- ▷ **Programme Number** lights up.
- Select the programme number of a TV channel with the digit keys.
- Select **Favourite** with the keys or .
- Press the keys ▶ or ◀ to select **Yes** or **No**.
  In this way you decide whether you want to keep the selected TV channel as a favourite TV channel or not.
  Repeat this for every TV channel you like to change into a favourite or a non-favourite TV channel.
- Press **MENU** again if you have finished selecting TV channels in the favourite list.
- ▷ The **INSTALLATION** menu reappears.

Install TV Configuration

Different options can be selected depending on the different peripheral equipment you may have connected to your TV.

- Select **TV Configuration** with the keys or and press **OK**.
- ▷ The **TV CONFIG.** menu appears and **Audio Output** lights up.

Audio Output

If you have audio equipment or another external sound source connected to your TV, you can select two types of audio output.

- Select **Variable** with the keys ▶ or ◀ if you want to adjust the volume of your audio equipment via the TV.
  Select **Constant** if you want to adjust the volume with the volume control of your audio equipment.

Ext2 Output

See **Record** with your video recorder, p. 35.

CD-i/Photo CD

See Connect Peripheral Equipment, TV and a CD-i/Photo CD, p. 31.

The following items deal with the installation of the Dolby Surround Sound possibilities.

- Select with the keys or the desired menu possibility.
- Select with the keys ◀ or ▶ the desired menu adjustment.

Surround Mode	Centre Mode	Ext. Amplifier	Front TV L & R	Front TV Centre	Rear L & R
Pro Logic (with Pro Logic broadcasting)	Normal		Yes	Yes	Yes
	Phantom		Yes	No	Yes
	Wide		Yes	Yes	Yes
		No			
Dolby 3 (with stereo broadcasting)	Normal		Yes	Yes	No
	Phantom		Yes	No	No
	Wide		Yes	Yes	No
		No			
Mall (with mono broadcasting)	Normal		Yes	No	Yes
	Phantom		Yes	No	Yes
	Wide		Yes	No	Yes
		No	(to select in Surr. mode Pro		
Off	Normal		Yes	No	No
	Phantom		Yes	No	No
	Wide		Yes	No	No
		No	(to select in Surr. mode Pro		

You have connected an audio amplifier to **AUDIO L** and **R** at the back of your TV. See Connect Peripheral Equipment, Audio equipment, p. 31.

- Select
  - Surround Mode : **Pro Logic** or Dolby 3
  - Centre Mode : Normal or **Wide**
  - Ext. Amplifier : **Yes**
- Press **MENU**.
- ▷ The **INSTALLATION** menu reappears.

Define Decoder/Descrambler prog. numbers

If you have connected a decoder or a descrambler, see p. 33, you can define one or more programme numbers as decoder programme numbers.

- Select **Decoder/Descrambler** with the keys or and press **OK**.
- ▷ The **DECODER/DESCRAMBLER** menu appears.
- Select **Programme** with the keys or .
- ▷ **Programme** lights up.
- Select the programme number under which you want to store the programme coming from your decoder with the digit keys.
- Select **Decoder Status** with the keys or .
- ▷ **Decoder Status** lights up.
- Press the keys ▶ or ◀ to select **Off**, **EXT1** or **EXT2**, the euroconnector where you connected your decoder.
  Select **Off** if you do not want the selected programme number being activated as a decoder programme number.

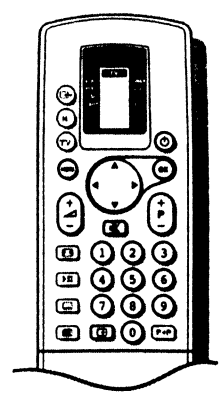
Fast exit from the menus

- Keep the **MENU** key pressed to switch off all menus.

Operation

To be operational with the remote control your TV should be in the TV operation position.
If this is not the case, first press the **TV** key left of the display. The letters **TV** in the display of the remote control appear in a black block for a few seconds.

Every time you press a key on the remote control, a green lamp on the front of your TV set blinks.



Switch TV on

- Press ⏻ on the front of your TV.
- ▷ A green lamp lights up and the programme appears.
- ▷ Does a red lamp light up ? Your TV is on standby. Read on.

Switch to standby

- Press the red standby key ⏻ at the top of the remote control to switch the TV off temporarily.
- ▷ A red lamp on the TV lights up.
- Press the digit keys or P - or + in order to switch the TV on again.
  If for a period of 10 minutes no aerial signal is received, then your set automatically switches to standby.

Your TV consumes energy in the standby mode. Energy consumption contributes to air and water pollution. We advise to switch off your TV overnight instead of leaving it on standby. You save energy and the picture tube is demagnetised which maintains good picture quality.

Select TV channels

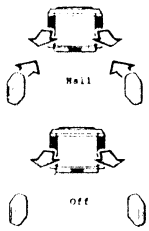
- Select the TV channel with the digit keys or with the key P - or + on the remote control.
- For a two digit programme number, enter the second digit within 2 seconds.
- If you want to know which channel you are watching, press ⊡.

Quickly run through the TV channels from the Favourite list.
- Hold the P - or + key pressed down.

Adjust the volume

- Press ◿ - or +.

If you want to store the volume adjustment in the memory, see the Features menu, General PP Store, p. 20, to store the same volume adjustment for all the stored TV channels.



Hall

▷ The centre sound signal is distributed over the rear loudspeakers which creates a hall effect from the rear.
▷ The centre loudspeaker does not produce any signal.
This mode is recommended when you wish to add surround sound to a non Dolby Surround broadcast.

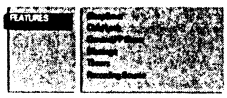
Off

▷ This mode reproduces only the left and right front sound signals.
Dolby is not active. You only hear a stereo sound if the broadcast which you are watching or listening to is transmitted in stereo or digital sound.

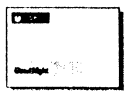
○ Press **MENU** twice.
▷ The **MAIN MENU** reappears.

"Dolby", "Pro Logic" and the double-D symbol are trademarks of Dolby Laboratories Licensing Corporation.
Manufactured under license from Dolby Laboratories Licensing Corporation.

Features



○ Select **FEATURES** in the **MAIN MENU** with the keys or and press **OK**.
▷ The **FEATURES** menu appears.
○ Use the keys and to make your selection in the **FEATURES** menu.
▷ Your selection lights up.



Sleeptimer

With the aid of the sleeptimer you can set a time period after which the TV should switch itself off to standby.
○ Hold the ▶ key pressed down.
▷ The counter runs from **Off** up to **180 min**.
○ Hold the ◀ key pressed down.
▷ The counter runs from **180 min** down to **Off**.
If you have set a time, then one minute before the TV switches off the remaining minute automatically appears on the screen together with the message **Good Night**. You can always switch off your set earlier or change the set time.

Child Lock

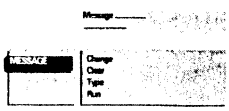
If the child lock is on, the TV can only be switched on with the remote control. The keys on the TV cannot be used. In this way you can prevent unauthorised use of your TV.
If the message **Child Lock ON** appears, the child lock must be switched off before you can use the keys on the TV.
○ Press the keys ◀ or ▶ to select **On** or **Off**.

General PP Store

○ Select **General PP Store** with the keys or .
○ Press **OK**.
▷ **General PP Store** lights up and the message **Stored** appears briefly on the bottom of the screen.
▷ The adjustments of contrast, brightness and colour made in the picture menu and the adjustments of volume and balance made in the sound menu are stored in memory for all the stored TV channels.

Message

With this function you can enter a personal message which will be displayed automatically when the set is switched on from standby.
E.g. *I'll be late this evening. Don't wait for dinner.*



○ Select **Message** with the keys or .
○ Press **OK**.
▷ The **MESSAGE** menu appears and consists of a message part and a selection menu.

○ Select **Change** with the keys or and press **OK**.
▷ A block appears on the first position of the first message line.
○ Select with the or keys the letter or number you want to enter.
○ Select with the ▶ key the next position.
○ Enter the letters or numbers.
You can enter text on 2 lines of 27 characters each.

Did you fill in a wrong letter or number ?
○ *Select with the ◀ or ▶ keys the position of the letter or number you want to modify.*
○ *Select with the or keys the correct letter or number.*

○ Press **OK** when you have entered the complete message.
○ Press the or keys to make a different selection in the message menu.

Remove message

○ Select **Clear** and press **OK** to remove a previous message.
▷ The previous message is removed.

Message type

○ Select **Type**.
▷ **Type** lights up.
○ Press the keys ◀ or ▶ to select the way the message to be displayed : **Wipe**, **Slide**, **Fall** or **Fade**.

Run message

○ Select **Run**.
▷ **Run** lights up.
○ Press the keys ◀ or ▶ to select the displaying frequency : **Continuous**, **Once** or **No**.

Display message

○ Switch the TV to standby.
▷ The message appears on the screen the moment the TV is switched on again.
When you selected **Once**, the message will disappear from the screen after 30 seconds.
When you selected **Continuous**, the message will appear on the screen continuously until the TV is switched off with the power key ⏻ on the front of the TV.
The message does NOT appear when Continuous Subtitles have been switched On and ▤ is displayed on the bottom of the screen. See Teletext, p. 29.

Timers

With the Timers menu you can make your TV automatically switch to a specific programme number from standby or switch over to a different programme number at a specific time.

○ Select **Timers** with the keys or in the **FEATURES** menu and press **OK**.
▷ The **TIMERS** menu appears and **Actual Time** lights up.

Actual time

On prog. no 1 you have installed a TV channel which also broadcasts teletext. See Teletext, p. 27.

▷ The time is downloaded from that TV channel.
○ In case you want to enter another time use the digit keys.
▷ The time entered manually is updated every minute and remains until the TV set is switched off with the power key ⏻.

or

On prog. no 1 you have installed a TV channel which does NOT broadcast teletext. See Teletext, p. 27

▷ The time is set to --:-- and should be set manually.
○ Enter the actual time with the digit keys.
▷ The displayed time is updated every minute and remains until the TV set is switched off with the power key ⏻.

If you filled in an incorrect digit.
○ *First complete the actual time with arbitrary numbers and then start again.*

Programme

○ Select **Programme** with the keys or .
▷ **Programme** lights up.
○ Enter with the digit keys the programme number of the TV channel you want your TV to switch over to.

Have you entered a wrong number ?
○ *Enter the right digit(s) again.*

Start time

○ Select **Start Time** with the keys or .
▷ **Start Time** lights up.
○ Enter with the digit keys the start time of the selected TV programme you want your TV to switch over to.

▷ At the programmed time your TV will switch over from standby to the selected programme number.

or

▷ At the programmed time your TV will switch over to the selected programme number when you are watching another TV channel.

Cancel timer

○ Select **Cancel Timer** with the keys or and press **OK**.
▷ **Cancel Timer** lights up and the **Start Time** is reset to --:--.

○ Press **MENU**.
▷ The **FEATURES** menu reappears.

Recording Source

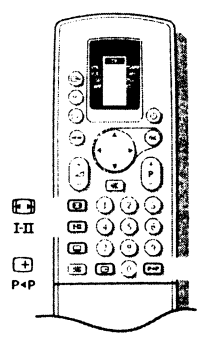
See Peripheral Equipment, Recording with your video recorder, p. 35.

Select Programme list

○ Select **PROGRAMMES** with the keys or in the **MAIN MENU** and press **OK**.
▷ A page with an overview of stored TV channels, together with the names you entered for the connected peripheral equipment appears.
Programme numbers from the favourite list are displayed in white characters.
Programme numbers which are not in the favourite list are displayed in black characters.
The current TV channel on the screen is indicated with a black block.
○ Press the keys or to select a TV channel within the column.
○ Press the keys ◀ or ▶ to select another column of the programme list.
○ Press **OK** to select the desired TV channel.

○ Press **MENU** twice.
▷ The **MAIN MENU** disappears.

Other functions

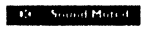


Vertical Squeeze

Movies and other new programmes may in the future be broadcast in a Wide Screen format.
Satellite programmes in the Wide Screen picture format recorded on a video recorder or prerecorded Wide Screen tapes can be reproduced on a normal TV screen in a conventional picture format.
○ Press ▤.
▷ The picture is compressed.
There are black bars at the top and bottom of the screen.
▷ The message **Vertical Squeeze** appears for a moment in the left upper corner of the screen.
○ Press ▤ again to switch off vertical squeeze.
When you have a Wide Screen format video recorder connected with a eurocable, the pictures will be compressed automatically.

Bilingual broadcast

○ Press the key **I-II** repeatedly to select language **I** or **II** when the TV channel broadcasts in 2 languages, dubbed or original language (e.g. Eurosport) or to select analogue or digital when the TV channel broadcasts in digital sound.
▷ **Dual I** or **II** appears briefly on the screen.
The setting is stored in the memory for the selected TV channel when switching to another TV channel or to standby.



Temporarily interrupt the sound

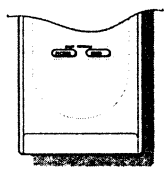
- Press 🔇.
- ▸ The sound is temporarily interrupted.
- Press 🔇 again to get the sound back.

Switch menus on and off

- Press **MENU** on the remote control.
- ▸ The **MAIN MENU** appears.
- Use the keys and to make a selection of the Main Menu items.
- ▸ Your selection lights up.
- Press the **OK** key on the remote control to activate the selected menu.
- Press **MENU** again to return to the previous menu.
- Keep the **MENU** key pressed to switch off all menus.

Main Menu

Select the picture settings



During manufacture four types of picture setting have been pre-defined.
You can choose among these four different settings with the **PICTURE** key of the smart controls on the door of the remote control.

- Press the Smart Controls' key **PICTURE** repeatedly to select : **Soft, Natural, Rich** or **Personal**.
- ▸ The picture setting possibilities are displayed briefly on top of the screen.
The picture settings correspond with a specific predefined setting of Brightness, Contrast and Colour.
Personal refers to the personal preference settings of brightness, contrast and colour you can adjust in the **PICTURE** menu and store with **General PP store** in the **FEATURES** menu.

Adjust picture settings

- Press **MENU** on the remote control.
- ▸ The **MAIN MENU** appears and **PICTURE** lights up.
- Press **OK**.
- ▸ The **PICTURE** menu appears.

- Select with the keys and the adjustments of **Contrast, Brightness, Colour, Sharpness, Tint, Digital Scan** and **Contrast Plus** you want to change.

When you are watching a TV channel in the NTSC-system, the option Hue also appears and can be adjusted in the PICTURE menu.

- Press the keys ◂ or ▸ to alter the selected adjustment.
- ▸ The **PICTURE** menu disappears and only the selected menu item remains (including its bar) on the screen.
- ▸ The **PICTURE** menu reappears after a few moments or by pressing **OK**.
Now you can select another adjustment with the keys and .

Tint

- Press ◂ or ▸ to select the colour temperature : **Normal, Warm** or **Cool**.
- Press **OK**.
- ▸ The **PICTURE** menu reappears.

Digital Scan (Line Flicker Reduction)

In certain circumstances while watching TV programmes it may be preferred to switch off the digital scan line flicker reduction.

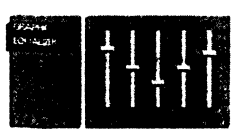
- Press the keys ◂ or ▸ to select **On** or **Off** and press **OK**.
- ▸ The **PICTURE** menu reappears.

If you want to store the modified adjustments for all the TV channels

- Select **Features** in the Main Menu with the keys or and press **OK**.
- ▸ The **FEATURES** menu appears.
- Select **General PP Store** with the keys or and press **OK**.
- ▸ The message **Stored** appears briefly on the bottom of the screen.
- ▸ You have created and stored a new **Personal** sound style.

- Press **MENU**.
- ▸ The **MAIN MENU** reappears.
- Press **MENU** again to switch off the **MAIN MENU**.

Select the sound settings



During manufacture 6 types of sound style have been pre-defined.
You can choose among these six different styles with the **SOUND** key of the smart controls on the door of the remote control.

- Press the Smart Controls' key **SOUND** repeatedly to select : **In concert, Classic, Jazz, Pop, Stadium** or **Personal**.
- ▸ The sound styles are displayed briefly on the top of the screen.
Each sound style corresponds with a specific predefined setting of the graphic equalizer.
Personal refers to the personal preference settings of volume, balance, treble and bass you can adjust in the sound menu and store with **General PP store** in the **FEATURES** menu.

Adjust sound settings

- Press **MENU** on the remote control.
- ▸ The **MAIN MENU** appears.
- Select **SOUND** with the keys or and press **OK**.
- ▸ The **SOUND** menu appears.
- Select with the keys or the adjustments of **Volume** and **Balance**.
- Press the keys ◂ or ▸ to change the selected adjustment.
- Select **Graphic Equalizer** with the keys or and press **OK**.
- ▸ The **GRAPHIC EQUALIZER** menu appears.
- Press the keys ◂ or ▸ to select an equalizer setting.
- Press the keys or to adjust the **Treble** and **Bass** settings.

Select the sound styles with the sound menu

This menu item has the same function as the Smart Controls key **Sound** on the remote control as mentioned above.

- Select **Sound Style** in the menu **SOUND** with the keys or .
- Press the keys ◂ or ▸ to select the preferred sound style : **In concert, Classic, Jazz, Pop, Stadium** or **Personal**.

Select the sound mode

Depending on the sound the TV channel transmits and if your set is equipped with Nicam, your TV will choose between stereo or digital sound unless you make a sound choice.
In case of weak stereo or digital sound signals, due to the transmission, select analogue or mono.

- Select **Sound Mode** in the menu **SOUND** with the keys or .
- Press the keys ◂ or ▸ to select the preferred sound mode :
. **Stereo** or **Mono** if the channel transmits *stereo* sound
. **Digital** or **Analogue** if the TV channel transmits *digital* sound

Switch Loudness on or off

When **Loudness On** is selected, the low and high frequencies are amplified so that the natural balance is restored when listening to low volume sound.

Select Speech

When **Speech On** is selected, the treble settings are revealed and the bass settings are suppressed.

Select Spatial sound

When **Spatial On** is selected, it seems as though the loudspeakers are spread further apart from one another.
You get a spatial sound effect.

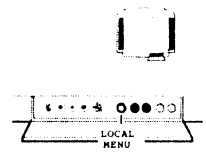
Headphone selection

See Connect Peripheral Equipment, p. 32 for the connection of your headphone if you want to use it.

- Select **Headphone** with the keys or and press **OK**.
- ▸ The **HEADPHONE** menu appears.
- First select **Source** with the keys or .
- ▸ **Source** lights up.
- Press the keys ◂ or ▸ to select the source you want to listen to with your headphone : **Automatic, TV, EXT1, EXT2, EXT3** or **FRONT**.
- Select **Automatic** if you want to listen to the sound of the picture you are watching on the screen.
- Select **TV** when you want to listen to the sound of a TV channel via your TV tuner and watch a programme via your video recorder or other peripheral.
E.g. you can watch a film from your video recorder, but listen to the commentary of a broadcasted football match.
- In all other cases select the source where you connected your equipment.
The equipment should be switched on, but you don't need to watch it.

- Select with the keys or the adjustments **Volume** or **Balance**.
- ▸ The selected adjustment lights up.
- Press the keys ◂ or ▸ to regulate the selected adjustment.
- Press **MENU**.
- ▸ The **SOUND** menu reappears.

Adjust the basic picture and sound settings with the Local Menu key

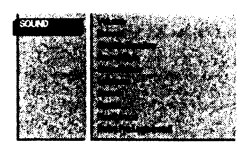


Should your remote control be lost or broken you can still change some of the basic picture and sound settings.

- Press the **LOCAL MENU** key at the front of the TV.
- ▸ The adjustment **Volume**, including a bar, appears on the screen.
- Press the key **V** - or + behind the door at the front of the TV to adjust the volume.
- Press the Local Menu key again or repeatedly to select a following adjustment.
- ▸ The adjustments **Volume, Brightness, Colour** or **Contrast**, appear on the screen.
- Press the key **V** - or + at the front of the TV to regulate the selected adjustment.
- Press the **Local Menu** key again after you selected the last adjustment.
- ▸ The local menu adjustments disappear.

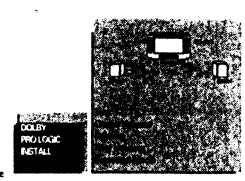
The Local Menu automatically switches off when after 10 sec no action has been executed.

Dolby® Pro Logic Install



- Select **Dolby Pro Logic Install** with the keys or and press **OK**.
- ▸ The **DOLBY PRO LOGIC INSTALL** menu appears and **Test** lights up.

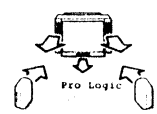
Most programmes will sound good with the volume balance between the centre, left and right and rear loudspeakers in an equally loud position.
However, some programmes may benefit from an adjustment of the level of the respective speakers.
Which loudspeakers are active depends on the selection you have made in the TV-Configuration menu, p. 11.



- Select **Surround Mode** with the keys or .
- Press the keys ◂ or ▸ to select **Pro Logic**.
- Select **Test** again with the keys or .
- Press the keys ◂ or ▸ to switch **Test on**.
- ▸ A steady noise tone is switched sequentially through the left, centre, right and rear loudspeakers, for 2 seconds each. This enables you to adjust the volume of the separate loudspeakers.
The loudspeakers activated light up in the on screen graphic.
- Select with the keys or **Centre Volume, Balance** or **Rear Volume**.
- ▸ The selected adjustment lights up.
- Press the keys ◂ or ▸ to alter the selected adjustment.
- Select **Test** again with the keys or .
- Press the keys ◂ or ▸ to switch **Test off** again.

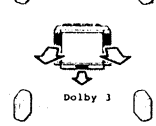
Surround mode

- Select **Surround Mode** with the keys or .
- ▸ **Surround Mode** lights up.
- Press the keys ◂ or ▸ to select the preferred surround mode : **Pro Logic, Dolby 3, Hall** or **Off**.



Pro Logic

- ▸ In addition to the left and right front speakers, the centre and the rear surround loudspeakers reproduce the Dolby Surround Pro Logic sound.
This 4 channel sound is always recorded when the movie or programme is marked with **[X] Dolby Surround**.
This mode is especially recommended with Dolby Surround or Dolby Surround Pro Logic encoded programmes or movies.



Dolby 3

- ▸ The Dolby 3 sound signal is now distributed over the front left, the front right and the centre loudspeakers.
- ▸ The rear loudspeakers do not produce any signal.

Information on screen

After the selection of a TV channel or a programme from a peripheral or after pressing the key [i] the following information may appear briefly or continuously on your screen :

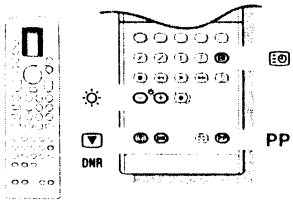
- the programme number and name of the selected TV channel
- information from the broadcaster in a bar at the bottom of the screen (e.g. the programme name or the programme title or another message)
- **Digital Sound available** if the TV channel transmits digital sound
- the currently selected sound mode if the TV channel transmits stereo or digital sound (not with a programme from a peripheral or coming from a decoder)
- **Sound muted** when the sound is temporarily interrupted
- **Dual I** or **II** in case of bilingual broadcast
- the **Ext2 Output** selected in the TV Configuration menu (see p. 11)
- the selected DNR setting (see p. 25).

Permanent Programme Number

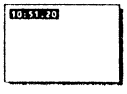
- Press [i] for a long time.
- ▷ The permanent programme number remains in the upper right corner of the screen when it was off, or disappears when it was on.

Select previous programme

- Press the P•P key.
- ▷ The previous selected TV channel is displayed.



Clock



- Open the door of the remote control.
- Press [clock].
- ▷ The time, downloaded from the TV channel (with teletext) stored on programme number 1, or entered manually in the Timers menu, appears in the upper left hand corner of the screen.
  This is not possible when Continuous Subtitles have been switched on and [subtitles] is displayed on the bottom of the screen. See Teletext, p. 27.
- Press [clock] again in order to switch off the clock.

Adjust Brightness

- Open the door of the remote control.
- Press ☼ - or + in order to adjust the brightness.

Freeze the picture

- Open the door of the remote control.
- Press [▼].
- ▷ The picture is frozen.
- Press [▼] in order to get moving pictures again.

DNR

With DNR you can reduce the image noise and so improve picture quality when receiving weak signals.

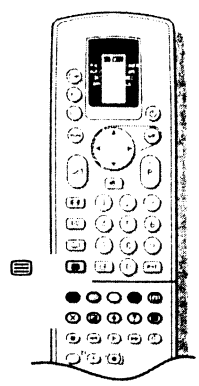
- Open the door of the remote control.
- Press [DNR] repeatedly to select **DNR Min**, **DNR Med**, **DNR Max** or **DNR Off**.
  DNR Med offers you optimum picture quality and is the usual setting for normal strength signals.
  DNR Max should only be used for poor picture quality.
- ▷ Your selection appears for a moment at the top of the screen.

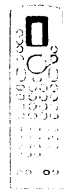
The setting is stored in memory for the selected TV channel after the indication disappeared from the screen.

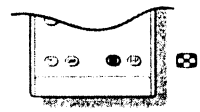
PP key

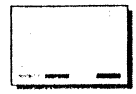
With the green **PP** key you can call up the picture and sound adjustments which have been stored with General PP Store in the Features menu, p. 20.

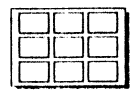
- Open the door of the remote control.
- Press **PP**.











Mosaic screen

- Open the door of the remote control.
- Press [mosaic].
- ▷ A menu line **MOSAIC** appears on the bottom of the screen. It contains three functions : **Scan**, **Photo Fin.**, **Strobe**.
- Select with the keys ◀ or ▶ the function you want to activate and press **OK**.

Scan

- ▷ A scan of the stored TV channels is performed, starting with the favourite programme stored under the lowest programme number.

It is quite normal that during the scan you may notice a slight shaking or distortion of the picture.

Only TV channels placed in the favourite list are displayed. On the last position, a live picture is shown of the programme that was displayed before the mosaic screen was switched on, except when you were watching a picture from a peripheral. In this case the picture of the following favourite TV channel appears in the last position.

- Press **OK** again.
- ▷ A following series of stored TV channels from the favourite list or programmes from switched on peripherals is scanned.
  Each mosaic picture will contain its identifying programme number and name.
- Select a TV channel with the digit keys.
- ▷ The mosaic screen disappears and the selected TV programme is displayed.
- Press [mosaic] to interrupt the scan function and to switch off the mosaic screen.

Never perform a scan while recording a TV programme with a video recorder recording from **EXTERNAL** *1 or 2 since the scan will be recorded on tape.*

Photo Finish

- ▷ The main picture is displayed in successive frozen pictures.
  The last picture on the bottom right will remain live.
- Press **OK** again.
- ▷ A new photo finish picture is displayed, overwriting the old one.
- Press [mosaic] to switch off the photo finish function and the mosaic screen.

Strobe

- ▷ The picture is reproduced image by image. So you get an interrupted movement.
- Press **OK** again.
- ▷ The picture is reproduced image by image at a faster speed.
- Press [mosaic] to switch off the strobe function and to switch off the mosaic screen.

Teletext

Most TV channels broadcast information via teletext. Each channel which broadcasts teletext transmits a page with information on how to use its teletext system. Look for the teletext page with the main index (usually page 100).
TV programmes are sometimes subtitled for the hard of hearing.

Depending on the TV channel, teletext is transmitted in different systems.
The system utilised can be recognised by the options line at the bottom of the screen.
The colours used in the options line correspond with the colour keys under the door of your remote control.

About the Easy Text system

The Easy Text system makes use of a memory with a high level of intelligence. By making maximum use of this intelligence it is possible that in most cases the selected page appears on the screen almost immediately.
The only condition is that the teletext broadcast of the particular TV channel is switched on for at least half a minute.

The major advantages of this Easy Text system are :

A considerable **reduced waiting time** by predicting what you will probably select and which results in :

- a fast and direct selection of previous and following pages which are in transmission
- the precapturing of the page numbers referred to in the displayed page
- the direct selection of the pages referred to in the options line
- the creation of a **habit watcher list** : frequently used pages are put in a list of preferred pages so that they are immediately available afterwards. The pages are stored in the memory when switching off teletext or when switching to standby.

The precapturing of up to **9 subpages** to be controlled by the teletext user.

Switch Teletext on and off

- Select the TV channel for the desired teletext broadcast.
- Press [teletext] in order to switch on the teletext.
  If teletext is switched on when a menu is on the screen, the menu will automatically be removed.
- ▷ The main index page appears on the screen together with two information lines at the top and one option line at the bottom of the screen.
- Press [teletext] again in order to switch off teletext.
- ▷ The TV channel reappears.

Select a Teletext page

With the digit keys ..... **or** **With the option line**

- Enter the desired page number with the digit keys.
- ▷ The page counter seeks the page or the page appears immediately when the page number has been stored in the memory.
- ▷ A message appears when you have entered a non existent or an incorrect page number. Page numbers beginning with 0 or 9 do not exist.
- Enter the correct page number.

- Select with the colour keys, corresponding to the coloured options at the bottom of the screen and depending on the teletext system the selected TV channel transmits,
  - the previous ← [red] or the following [green] → pages
  - the 2 previously selected pages
  - another subject

Quickly run through the teletext pages

- Press **P -** to run through the previous pages.
- Press **P +** to run through the following pages.

Select the previously selected teletext page

- Press the **P↩P** key.
- ▷ The previously selected teletext page is displayed.

Select subpages

When a selected teletext page consists of different subpages, one of the subpages appears on the screen.
The coloured number in the first information line refers to the displayed subpage.

The other subpages can be selected in 2 ways :

With the keys ◀ or ▶.

The other subpage numbers appear in white as soon as the transmission has found them and they are stored in the memory so that they are available while the teletext page is on screen.

- Select with the keys ◀ or ▶ the previous or the following subpage.

or

By adding a subcode.

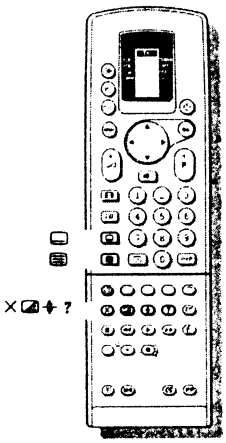
- Open the door of the remote control.
- Press [⊡].
- Enter the desired subpage with the digit keys : e.g. 3 for the third page of seven subpages.
- ▷ The TV searches for the selected subpage.
- Press [⊡] again in order to cancel the subcode.
- Press [⊡] again.
- ▷ The information line with the available subpages appears.

Select the index teletext page

- Open the door of the remote control.
- Press the white colour key [◫].
- ▷ The main index, usually p. 100, appears.

or

- Press **MENU**.
- ▷ A T.O.P. overview of the teletext subjects available appears.
  Not all TV channels broadcast the T.O.P. teletext.
  When the teletext system is not T.O.P. teletext, a message appears at the top of the screen.
- Select with the keys ◀, ▶, or the desired subject and pagenumber.
- Press **OK**.
- ▷ The selected page appears.



Select Continuous Subtitles

TV channels which broadcast teletext often transmit certain programmes with subtitling. Sometimes more than one subtitle page is available. For each TV channel you can store a subtitle page which will be displayed continuously if the programme being broadcast is transmitted with subtitles.

- Press [▣] in order to switch on the the teletext.
- Select the proper subtitle page with the digit keys.
- ▷ The selected subtitle page appears and also the subtitles when the programme transmitted is subtitled.
- Press [▭] on the remote control.
- ▷ The message **Subtitle stored** appears.
- Press [▣] in order to switch off the the teletext.
- ▷ Every time a programme of the selected TV channel is subtitled, the subtitles will be available.
  When there are no subtitles available, only [▣] is displayed on the bottom of the screen.
- Press [▭] on the remote control to switch the subtitles on or off.
- ▷ The message **Subtitles On** or **Off** appears.

For every TV channel the subtitle page should be stored separately with the [▭] key on the remote control.

Select Special teletext functions

- Press [▣] in order to switch on the the teletext.
- Open the door of the remote control.

Interrupt

- Press X.
- ▷ The TV programme appears.
- ▷ [▣] at the top of the screen indicates that you are still in the teletext mode. Before interrupting teletext, you can select a page number.
  The page number appears on your screen.
- Press X again.
- ▷ Teletext reappears.

Mix

- Press [◪].
- ▷ The teletext page and the TV programme appear on the screen at the same time.
- Press [◪] again.
- ▷ Only the teletext page is displayed.

Enlarge

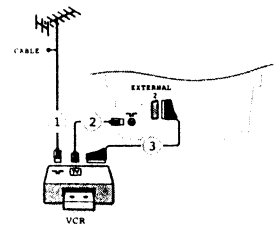
- Press [✢] to enlarge the top half of the teletext page.
- Press the keys or to scroll the text line per line.
- Press [✢] again to enlarge the bottom half of the teletext page.
- Press once more to return to normal page size.

Reveal

- Press **?** to call up concealed information, such as solutions to riddles and puzzles.
- Press **?** again in order to switch off the concealed information.

Connect Peripheral Equipment

There is a wide range of audio and video equipment that can be connected to your TV.
The following connection diagrams show you where the different equipment should be connected at the back or the front side of the TV.

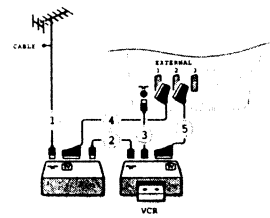


TV and video recorder

- Connect the aerial cables (1) and (2) as shown opposite.
  Better picture quality can be obtained if you also connect a eurocable (3).

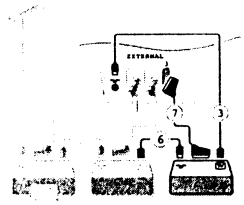
Search for and store the test signal of the video recorder

- Unplug the aerial cable (1) from the aerial socket ⊓ of your video recorder.
- Switch on your TV and put the video recorder on the test signal. (See the handbook for your video recorder.)
- Enter the Installation menu via the Main menu.
- Search for the test signal of your video recorder in the same way as you searched for and stored the TV signals. See Installation, Searching for and storing TV channels, Manual Installation, p. 7.
  Store the test signal either under programme number 0 or between 50 and 99.
- Replace the aerial cable in the aerial socket ⊓ of your video recorder once you have stored the test signal.



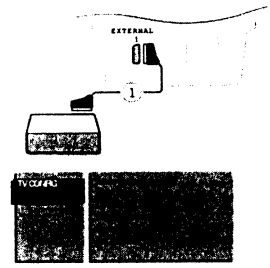
TV, video recorder and other peripherals (except CD-i/Photo CD)

- Connect the aerial cables (1), (2) and (3) as shown opposite. Better picture quality can be obtained if you also connect eurocable (5) to **EXTERNAL 2** and a eurocable (4) to **EXTERNAL 1** or 3.
- Look for the test signal of your peripheral in the same way as you do for a video recorder.



If you have more peripherals, they can also be connected to each other with an extra aerial cable (6) and an additional eurocable (7).

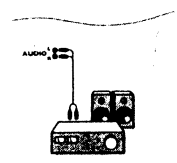
When a video recorder is connected to **EXTERNAL 1** you can only record a programme from your TV.
Only when a video recorder is connected to **EXTERNAL 2** it is possible to record a programme from your TV as well as from other connected equipment. See Record with your video recorder, p. 35.



TV and a CD-i/Photo CD

- Connect eurocable (1) as shown opposite.

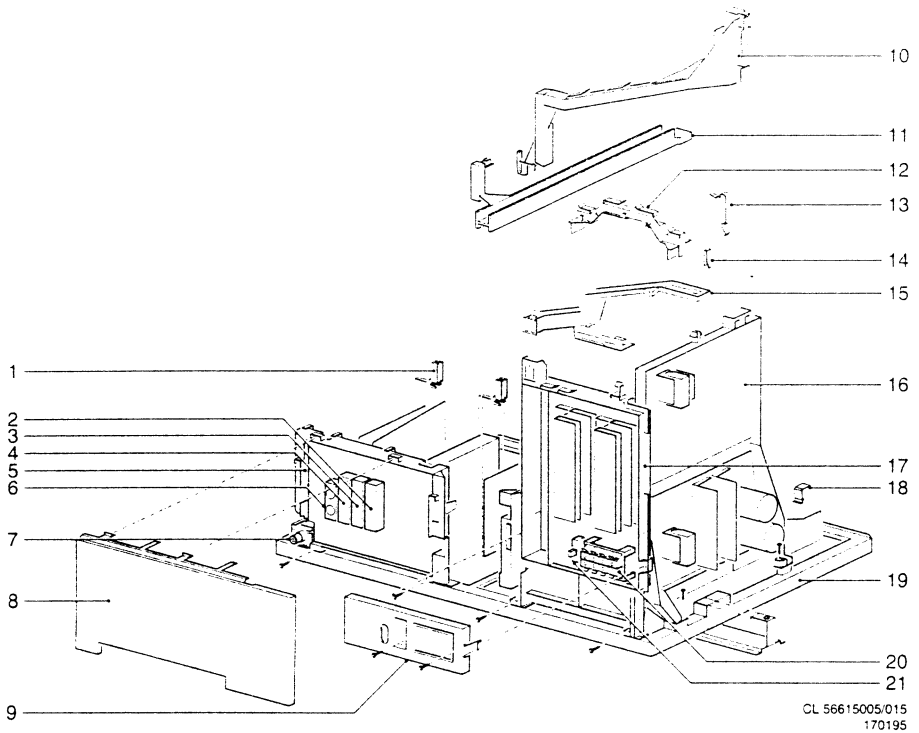
- Press **MENU** on the remote control.
- ▷ The **MAIN MENU** appears on the screen.
- Keep the key pressed and select **INSTALLATION.**
- ▷ **INSTALLATION** lights up.
- Press **OK**.
- ▷ The **INSTALLATION** menu appears.
- Select **TV-Configuration** with the keys or and press **OK**.
- ▷ The **TV-CONFIGURATION** menu appears.
- Select **CD-i/Photo CD** with the keys or .
- ▷ **CD-i/Photo CD** lights up.
- Press the keys ◀ or ▶ to select **Present.**
- ▷ This offers you optimum picture quality for your CD-i or Photo CD.



Audio equipment

You can listen to your TV sound via your audio equipment.

- Connect the audio cables to the audio input of your audio equipment and to **AUDIO L** and **R** at the back of your TV.
- Make your audio output selection in the Install TV Configuration menu. See p. 11.



CL 56615005/015
170195

Mechanical parts list

1	4822 404 31441	Lock for SSP
2	4822 267 60398	Socket SCART black
3	4822 267 60399	Socket SCART blue
4	4822 267 60399	Socket SCART blue
5	4822 464 70657	Frame for source select panel
6	4822 267 31877	socket 2 x cinch
7	4822 320 11113	Cable IEC/Phono
8	4822 432 93334	Cover SSP
9	4822 432 93335	Cover audio
10	4822 404 31438	Bracket for ELPS frame
11	4822 404 31436	Chassis lock
12	4822 404 31445	Bracket for scavem
13	4822 492 70789	Spring for transistor
14	4822 492 71649	Spring for transistor
15	4822 404 31437	Bracket
16	4822 464 70658	Frame for ELPS
17	4822 464 70656	Frame for audio amplifier
18	4822 492 62076	Spring for transistor
19	4822 464 70655	Frame for chassis
20	4822 290 61229	Socket for ext loudsp.
21	4822 277 30967	Swith loudsp. ON/OFF

Repair kits

FFS DRIVE REPAIR KIT GFL (4822 310 32214)

1011	4822 253 30467	Fuse 6.3A (ELPS)
1015	4822 310 32214	Supply drive panel
1135	4822 071 52502	Fuse 2.5A
1137	4822 071 52502	Fuse 2.5A
2102	4822 121 70586	39nF 1kV 5%
2109	4822 121 70581	1n5F 2kV 5%
2115	4822 126 11503	820pF 2kV 10%
2116	4822 126 11503	820pF 2kV 10%
3138	4822 113 80603	1Ω5 10% 7W (ELPS) 33"
3148	4822 113 80603	1Ω5 10% 7W (ELPS) 29"
6102	4822 130 32343	BYV26C
6103	4822 130 32343	BYV26C
6104	4822 130 33887	GP15J-16
6105	4822 130 33887	GP15J-16
6106	4822 130 33887	GP15J-16
6107	4822 130 33887	GP15J-16
6110	4822 130 41602	BYW95C/20
7111	4822 130 63724	G2391HEX

AUX 1 DRIVE REPAIR KIT GFL (4822 310 32215)

2227	4822 121 70584	1nF8 2kV 5%
2228	4822 122 20054	270pF 2kV 10%
7203	4822 209 83909	UC3842N
7228	4822 130 63725	STP4N40FI

LINE REPAIR KIT GFL 25" SF (4822 310 32216)

2409	4822 121 70594	1nF 2kV 5%
2412	4822 121 70593	24nF 630V 5%
2421	4822 121 51563	560nF 250V 5%
2429	4822 121 70398	11nF 2kV 5%
2433	4822 121 51528	470nF 250V 5%
6414	4822 130 83825	BY328/20
6418	4822 130 33531	BY229F-600
7414	4822 130 63329	BU2525A
7432	4822 130 63726	MTP3055EFI
7480	4822 130 63728	IRF620

LINE REPAIR KIT GFL 29" SF (4822 310 32212)

2409	4822 121 70595	1nF2 2kV 5%
2412	4822 121 70585	27nF 630V 5%
2421	4822 121 51563	560nF 250V 5%
2423	4822 121 51563	560nF 250V 5%
2429	4822 121 70398	11nF 2kV 5%
6414	4822 130 83825	BY328/20
6418	4822 130 33531	BY229F-600
7414	4822 130 63329	BU2525A
7432	4822 130 63726	MTP3055EFI
7480	4822 130 63728	IRF620

LINE REPAIR KIT GFL 33" (4822 310 32213)

2409	4822 121 70581	1nF5 2kV 5%
2412	4822 121 70585	27nF 630V 5%
2421	4822 121 51563	560nF 250V 5%
2423	4822 121 51563	560nF 250V 5%
6414	4822 130 83825	BY328/20
6418	4822 130 33531	BY229F-600
7414	4822 130 62843	2SC4288A
7432	4822 130 63726	MTP3055EFI
7480	4822 130 63728	IRF620

Spare parts list / Stükliste / Liste des pièces

Large signal panel [L1] [L2]

Various

	4822 265 41448	7P male v 2.5 grey
	4822 265 41461	10P male v 2.5
	4822 265 51382	23P male v 1.25
	4822 265 31245	4P male v 2.5
	4822 265 31246	6P male v 2.5
	4822 265 20697	2P male v yellow
	4822 265 31244	3P male v 2.5
	4822 265 31243	5P male v 2.5
	4822 265 20698	2P male v red
	4822 321 62859	Cable 5P 2.5 28cm AP23-L23
	5322 390 29011	Vet sinc P4 20GR
	4822 492 62076	Spring fix 7111
	4822 492 71649	Spring fix trans.
	4822 492 70789	Spring fix trans.
	4822 466 93462	nsulator 24 X 40
	4822 466 93463	nsulator 20 X 30
	4822 466 93461	nsulator 20 X 25
	4822 466 92954	Spacer 16mm
	4822 404 31305	Support FFS drive
	4822 532 61267	Spacer 17.5mm
	4822 404 31445	Bracket for PANADAF
	4822 320 22233	EHT cable 29"
	4822 320 11108	EHT cable 33"
	4822 320 20216	Focus cable
1135▲	4822 071 52502	Fuse 2.5A
1137▲	4822 071 52502	Fuse 2.5A

⊣⊢

2100	4822 124 23492	220uF 50% 385V
2101	4822 124 40737	150uF 20% 25V
2102	4822 121 70586	39nF 5% 1kV
2103▲	4822 126 11141	2.2nF 10% 1kV
2104▲	4822 126 11141	2.2nF 10% 1kV
2109	4822 121 70581	1.5nF 5% 2kV
2112▲	4822 126 12095	220pF 10% 2kV
2115▲	4822 126 11503	820pF 10% 2kV
2116▲	4822 126 11503	820pF 10% 2kV
2121	4822 122 31175	1nF 10% 500V
2122	4822 126 11157	470pF 10% 500V
2123	4822 126 11157	470pF 10% 500V
2125▲	4822 122 33665	3.3nF 20% 125V
2126	4822 126 11157	470pF 10% 500V
2127	4822 124 40785	3300uF 20% 25V
2128	4822 126 11157	470pF 10% 500V
2129	4822 124 40785	3300uF 20% 25V
2130▲	4822 126 12267	470pF 10% 2kV
2131	4822 124 22583	47uF 160V
2134	4822 121 51379	82nF 5% 63V
2135	4822 126 11157	470pF 10% 500V
2136	4822 124 41747	680uF 20% 35V
2137	4822 126 11157	470pF 10% 500V
2138	4822 124 40214	1000uF 20% 25V
2139	4822 124 41596	22uF 20% 50V
2141	4822 124 41596	22uF 20% 50V
2144	5322 121 42489	33nF 5% 250V
2201	4822 124 81083	10uF 20% 16V
2202	5322 122 32031	1nF 10% 100V
2203	5322 121 42386	100nF 5% 63V
2204	5322 121 42386	100nF 5% 63V
2216	4822 121 70583	1.5nF 5% 100V
2220	5322 121 42386	100nF 5% 63V
2221▲	4822 124 40433	47uF 20% 25V
2224	4822 124 81084	100uF 20% 160V
2225	4822 126 11157	470pF 10% 500V
2226	4822 126 11157	470pF 10% 500V
2227	4822 121 70581	1.5nF 5% 2kV
2228	4822 122 20054	270pF 10% 2kV
2234	4822 126 11157	470pF 10% 500V
2235	4822 124 80215	1000uF 20% 35V
2236	4822 124 41596	22uF 20% 50V
2237	4822 126 11157	470pF 10% 500V
2238	4822 124 80367	1800uF 20% 35V
2240	4822 124 41596	22uF 20% 50V
2242	4822 126 11501	1.5nF 10% 500V
2243	4822 124 22263	220uF 20% 25V
2259	5322 121 42386	100nF 5% 63V
2260	5322 124 21189	100uF 20% 40V
2262	4822 126 10334	470pF 10% 50V
2263	4822 126 10334	470pF 10% 50V
2264	5322 124 40641	10uF 20% 100V
2266	5322 121 42386	100nF 5% 63V
2267	4822 121 42408	220nF 5% 63V
2402	4822 121 41689	100nF 10% 250V
2403	4822 121 43368	47uF 160V
2406	4822 126 11823	270pF 10% 500V
2409	4822 121 70584	1nF5 5% 2kV
2409	4822 121 70595	1nF5 5% 2kV
2412	4822 121 70585	27nF 5% 630V
2412	4822 121 70593	24nF 5% 240V
2413▲	4822 126 11503	820pF 10% 2kV
2414	4822 121 42408	220nF 5% 63V
2419	4822 121 70435	12nF 5% 2kV
2421	4822 121 51563	560nF 5% 250V
2423	4822 121 51563	560nF 5% 250V
2424	4822 124 80341	1uF 20% 160V
2425	5322 124 41299	68uF 20% 25V
2426	4822 121 41854	150nF 5% 63V
2428	4822 126 11157	470pF 10% 500V
2429	4822 121 70398	11nF 5% 2kV
2430	4822 124 22466	1uF 20% 50V
2432	4822 126 10334	470pF 10% 50V
2435	4822 126 11966	100pF 10% 500V
2438	4822 124 40763	2.2uF 100V
2443	4822 124 41643	100uF 20% 16V
2444	4822 124 41643	100uF 20% 16V
2446	4822 126 11501	1.5nF 10% 500V
2447	4822 126 11501	1.5nF 10% 500V
2450	4822 121 51243	56nF 5% 50V
2455	4822 121 40516	22nF 10% 250V
2460	4822 126 11501	1.5nF 10% 500V
2461	4822 124 21511	2200uF 20% 25V
2462	4822 126 11501	1.5nF 10% 500V
2463	4822 124 22347	47uF 20% 50V
2465	4822 126 11501	1.5nF 10% 500V
2466	4822 124 41387	470uF 20% 25V
2469	4822 124 40242	1uF 20% 63V
2470	5322 121 42489	33nF 5% 250V
2471	4822 124 81089	2.2uF 20% 160V
2473	4822 121 41857	10nF 5% 250V
2474	4822 121 41854	150nF 5% 63V
2475	4822 126 11501	1.5nF 10% 500V
2476	4822 124 23265	4.7uF 20% 350V
2481	4822 124 81087	1uF 20% 200V
2491	4822 126 12832	2.7nF 10% 100V

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3102	4822 117 11602	1R 10% 5W
3103	4822 117 11592	22R 5% 3W
3112	4822 117 11598	820Ω 10% 5W
3112	4822 116 52176	10Ω 5% 0.5W
3114▲	4822 053 21225	2M2 5% 0.5W
3115▲	4822 053 21225	2M2 5% 0.5W
3116	4822 116 83864	10k 5% 0.5W
3117	4822 116 83864	10k 5% 0.5W
3118	4822 116 52215	220Ω 5% 0.5W
3119	4822 116 52228	680Ω 5% 0.5W
3120	4822 053 11333	33k 5% 2W
3123	4822 050 11002	1k 1% 0.4W
3124	4822 117 11603	OR22 5% 0.5W
3125	4822 117 11603	OR22 5% 0.5W
3127	4822 050 24702	4k7 1% 0.6W
3128	4822 050 24702	4k7 1% 0.6W
3130	4822 053 10223	22k 5% 1W
3132	4822 116 83864	10k 5% 0.5W
3133	4822 116 52289	5k6 5% 0.5W
3134	4822 116 52215	220Ω 5% 0.5W
3135	4822 116 52249	1k8 5% 0.5W
3136	4822 116 52249	1k8 5% 0.5W
3137	4822 116 52249	1k8 5% 0.5W
3138	4822 116 52289	5k6 5% 0.5W
3146	4822 116 52256	2k2 5% 0.5W
3147	4822 116 52257	22k 5% 0.5W
3148	4822 116 52239	120k 5% 0.5W
3149	4822 116 52264	27k 5% 0.5W
3200	4822 116 52284	47k 5% 0.5W
3201	4822 116 52284	47k 5% 0.5W
3203	4822 116 52244	15k 5% 0.5W
3205	4822 116 52249	1k8 5% 0.5W
3206	4822 116 52222	390Ω 5% 0.5W
3207	4822 116 52284	47k 5% 0.5W
3208	4822 116 52284	47k 5% 0.5W
3210	4822 101 11186	470Ω 30% LIN
3211	4822 116 52289	5k6 5% 0.5W
3212	4822 116 52273	3k6 5% 0.5W
3213	4822 116 52271	33k 5% 0.5W
3214	4822 116 52284	47k 5% 0.5W
3216	4822 116 52244	15k 5% 0.5W
3220	4822 117 10177	120R 5%
3221	4822 116 52234	100k 5% 0.5W
3224	4822 116 52195	47Ω 5% 0.5W
3226	4822 116 83864	10k 5% 0.5W
3227	4822 115 10129	27Ω 10% 5W
3231	4822 117 11604	OR39 5% 0.5W
3253▲	4822 050 25601	560Ω 1% 0.6W
3260	4822 050 11002	1k 1% 0.4W
3263	4822 116 52206	120Ω 5% 0.5W
3263	4822 116 52215	220Ω 5% 0.5W
3264	4822 116 52211	150Ω 5% 0.5W
3264	4822 116 52215	220Ω 5% 0.5W
3265▲	4822 050 25601	560Ω 1% 0.6W
3267▲	4822 052 10158	1Ω5 5% 0.33W
3270	4822 116 80176	1Ω 5% 0.5W
3271	4822 116 80176	1Ω 5% 0.5W
3272	4822 116 80176	1Ω 5% 0.5W
3273	4822 116 83864	10k 5% 0.5W
3274	4822 050 11002	1k 1% 0.4W
3275	4822 050 11002	1k 1% 0.4W
3400	4822 116 83864	10k 5% 0.5W
3401	4822 116 52269	3k3 5% 0.5W
3402	4822 116 83864	10k 5% 0.5W
3403	4822 116 83864	10k 5% 0.5W
3404	4822 117 11599	1k8 10% 5W
3404	4822 117 11601	2k2 10% 5W
3405	4822 116 83864	10k 5% 0.5W
3406	4822 116 83864	10k 5% 0.5W
3407	4822 116 52231	820Ω 5% 0.5W
3408	4822 050 11002	1k 1% 0.4W
3409	4822 116 52231	820Ω 5% 0.5W
3410	4822 116 52193	39Ω 5% 0.5W
3412	4822 053 11128	1Ω2 5% 2W
3412	4822 053 11158	1Ω5 5% 2W
3413	4822 053 11128	1Ω2 5% 2W
3413	4822 053 11158	1Ω5 5% 2W
3414	4822 116 52184	18Ω 5% 0.5W
3415	4822 053 10688	6Ω8 5% 1W
3416	4822 116 52176	10Ω 5% 0.5W
3417	4822 116 52176	10Ω 5% 0.5W
3418	4822 116 52261	24k 5% 0.5W
3419	4822 053 10152	1k5 5% 1W
3419▲	4822 053 10272	2k7 5% 1W
3421	4822 116 52234	100k 5% 0.5W
3422	4822 116 52271	33k 5% 0.5W
3423	4822 116 52271	33k 5% 0.5W
3424	4822 116 52283	4k7 5% 0.5W
3425	4822 116 52284	47k 5% 0.5W
3426▲	4822 052 10102	1k 5% 0.33W
3427▲	4822 052 10102	1k 5% 0.33W
3431	4822 050 25605	5M6 1% 0.6W
3432	4822 116 52234	100k 5% 0.5W
3433	4822 050 11002	1k 1% 0.4W
3434	4822 116 52224	470Ω 5% 0.5W
3435	4822 053 21394	390k 5% 0.5W
3436	4822 053 21474	470k 5% 0.5W
3437	4822 116 52224	470Ω 5% 0.5W
3438	4822 116 83864	10k 5% 0.5W
3439	4822 116 83878	270k 5% 0.5W
3440▲	4822 053 10159	15Ω 5% 1W
3441	4822 116 52219	330Ω 5% 0.5W
3442	4822 101 20901	10k 10% LIN
3443▲	4822 052 10108	1Ω 5% 0.33W
3444▲	4822 052 10108	1Ω 5% 0.33W
3445▲	4822 053 10159	15Ω 5% 1W
3446▲	4822 050 24708	4Ω7 1% 0.6W
3447▲	4822 050 24708	4Ω7 1% 0.6W
3449	4822 116 52234	100k 5% 0.5W
3450	4822 050 21403	14k 1% 0.6W
3451	4822 050 21403	14k 1% 0.6W
3452▲	4822 050 21503	15k 1% 0.6W
3454	4822 116 52234	100k 5% 0.5W
3455	4822 116 52297	68k 5% 0.5W
3456	4822 116 52271	33k 5% 0.5W
3457	4822 116 52255	200k 5% 0.5W
3457	4822 116 52262	240k 5% 0.5W
3460▲	4822 052 11108	1Ω 5% 0.5W
3461▲	4822 052 11108	1Ω 5% 0.5W
3462	4822 116 52283	4k7 5% 0.5W
3463▲	4822 050 21003	10k 1% 0.6W
3464	4822 116 52243	1k5 5% 0.5W
3464	4822 116 52263	2k7 5% 0.5W
3465▲	4822 052 11108	1Ω 5% 0.5W
3466▲	4822 052 11108	1Ω 5% 0.5W
3467▲	4822 052 10108	1Ω 5% 0.33W
3468	4822 116 52277	39k 5% 0.5W
3469	4822 116 52272	330k 5% 0.5W
3470	4822 116 52271	33k 5% 0.5W
3471	4822 116 52261	24k 5% 0.5W
3472	4822 050 11002	1k 1% 0.4W
3473	4822 050 11002	1k 1% 0.4W
3474	4822 116 52271	33k 5% 0.5W
3475	4822 052 11398	3Ω9 5% 0.5W
3476	4822 116 52282	430k 5% 0.5W
3477	4822 050 11002	1k 1% 0.4W
3480	4822 116 52234	100k 5% 0.5W
3481	4822 116 52297	68k 5% 0.5W
3482	4822 116 52284	47k 5% 0.5W
3487	4822 050 11002	1k 1% 0.4W
3489	4822 050 11002	1k 1% 0.4W
3490	4822 116 52234	100k 5% 0.5W
3491	4822 050 11002	1k 1% 0.4W
3492	4822 116 52269	3k3 5% 0.5W
3493	4822 116 52234	100k 5% 0.5W
3495	4822 116 52215	220Ω 5% 0.5W
3497	4822 116 52215	220Ω 5% 0.5W
3498	4822 116 83864	10k 5% 0.5W
3500	4822 116 83864	10k 5% 0.5W
3501	4822 116 83864	10k 5% 0.5W
3502	4822 116 52284	47k 5% 0.5W
3503	4822 116 83864	10k 5% 0.5W
3504	4822 116 52175	100Ω 5% 0.5W
3506	4822 116 52175	100Ω 5% 0.5W
3112	4822 116 52176	10Ω 5% 0.5W

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5102	4822 526 10494	Ferrite bead
5111	4822 526 10494	Ferrite bead
5120	4822 157 51216	5.6uH 10%
5125	4822 157 71471	Transf. FF-SUPPLY
5126	4822 157 71097	0.56uH 20%
5128	4822 157 71097	0.56uH 20%
5130	4822 526 10494	Ferrite bead
5131	4822 157 71453	27uH 10%
5132	4822 157 71453	27uH 10%
5134	4822 157 71453	27uH 10%
5135	4822 526 10494	Ferrite bead
5136	4822 526 10494	Ferrite bead
5137	4822 526 10494	Ferrite bead
5138	4822 157 71469	33uH 5%
5139	4822 157 71469	33uH 5%
5224	4822 526 10494	Ferrite bead
5230	4822 157 71474	Transf. AUX-SUPPLY
5231	4822 526 10494	Ferrite bead
5235	4822 157 71468	220uH 10%
5236	4822 157 71457	33uH 10%
5237	4822 157 71469	33uH 5%
5238	5322 157 52826	4.7uH 20%
5239	5322 157 52826	4.7uH 20%
5240	4822 157 60155	33uH 7.5%
5266	4822 157 83506	Ferrite bead
5401	4822 157 71467	39uH 10%
5406▲	4822 157 63252	Line driver transf.
5413	4822 157 71097	0.56uH 20%
5413	4822 157 71465	1uH 20%
5415	4822 157 83506	Ferrite bead
5416	4822 157 71097	0.56uH 20%
5417	4822 157 83506	Ferrite bead
5418	4822 526 10494	Ferrite bead
5419	4822 157 63253	Choke CU15
5421	4822 157 71472	Bridge coil 29"
5421	4822 157 71473	Bridge coil 33"
5428	4822 156 50107	Linearity corr. 33"
5428	4822 156 50112	Linearity corr. 29"
5440▲	4822 157 70006	DC-SHIFT
5450▲	4822 140 10516	L.O.T. 33"
5450▲	4822 140 10518	L.O.T 25"-28"-29"
5460	4822 157 71466	2.2uH 20%
5465	4822 157 71466	2.2uH 20%
5467▲	4822 157 50963	2.2uH 20%

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6102	4822 130 32343	BYV26C
6103	4822 130 32343	BYV26C
6104	4822 130 33887	GP15J-16
6105	4822 130 33887	GP15J-16
6106	4822 130 33887	GP15J-16
6107	4822 130 33887	GP15J-16
6108	4822 130 34142	BZX79-C33
6110▲	4822 130 41602	BYW95C-20
6120	4822 130 42488	BYD33D
6122	4822 130 33887	GP15J-16
6123	4822 130 33887	GP15J-16
6127	4822 130 33529	BY229F-200
6129	4822 130 33529	BY229F-200
6130	4822 130 81123	BY229F-800
6133▲	4822 130 30621	1N4148
6134▲	4822 130 31983	BAT85
6135	4822 130 42488	BYD33D
6137	4822 130 82035	BYD74D
6205▲	4822 130 30621	1N4148
6221	4822 130 42488	BYD33D
6230	4822 130 33887	GP15J-16
6231	4822 130 33887	GP15J-16
6234	4822 130 80982	BYW29F-100
6235	4822 130 42488	BYD33D
6237	4822 130 83824	PBYR740F
6242	4822 130 42488	BYD33D
6259	4822 130 42488	BYD33D
6262	4822 130 42488	BYD33D
6263	4822 130 32904	BZV85-C5V6
6263	5322 130 32282	BZV85-C13
6265	4822 130 42488	BYD33D
6406▲	4822 130 30621	1N4148
6409	4822 130 31024	BZX79-C18
6410	4822 130 30842	BAV21
6413	4822 130 42488	BYD33D

Spare parts list / Stükliste / Liste des pièces

Small signal panel [Sa] [Sb]

Various

	4822 404 31305	Support
	4822 532 61266	Spacer 22mm
	4822 321 62858	Cable 5P 1.25 25cm
	4822 404 31198	Spacer
	4822 267 70255	IC socket 32P
	4822 267 50887	IC socket 8P
	4822 265 41461	10P male v 2.5
	4822 265 51382	23P male v 1.25
	4822 265 31247	3P male v 1.25 black
	4822 265 51385	25P male v 1.25
	4822 265 41451	9P male v 1.25
	4822 265 41448	7P male v 2.5
	4822 265 31248	3P male v 1.25
	4822 265 41465	8P male v BTE
	4822 265 41466	10P male v BTE
	4822 265 31252	4P male v BTE
	4822 265 51251	5P male v 1.25
	4822 265 41467	12P male v BTE
	4822 265 51384	15P male v 1.25
	4822 265 31009	3P strip
1020	4822 212 31802	Service SSP
1200	4822 242 72572	10.000.000 MHz
1300	4822 210 10633	FQ816MF PI-MKC
1300	4822 210 10634	FQ816DMF PI-MKC
1300	4822 210 10636	FQ816ME PI-MKC
1300	4822 210 10637	FQ816DME PI-MKC
1350	4822 242 51967	Crystal 9.676545 MHz
1350	4822 242 51968	Crystal 4.433619 MHz
1616	4822 242 80276	crystal 10 MHz
2200	4822 124 41579	10uF 20% 50V
2202	4822 126 10002	100nF 20% 25V
2203	4822 126 10002	100nF 20% 25V
2204	5322 122 32668	22pF 5% 50V
2205	5322 122 32481	15pF 5% 50V
2206	4822 126 10002	100nF 20% 25V
2208	4822 126 10002	100nF 20% 25V
2209	4822 126 10002	100nF 20% 25V
2212	4822 126 10002	100nF 20% 25V
2213▲	4822 124 40433	47uF 20% 25V
2214	4822 124 40763	2.2uF 20% 100V
2300	4822 126 10002	100nF 20% 25V
2301	4822 126 10002	100nF 20% 25V
2302	4822 124 41643	100uF 20% 16V
2304	4822 126 13473	220nF 20% 50V
2306	4822 124 40763	2.2uF 20% 100V
2308▲	5322 122 32654	22nF 10% 63V
2310	4822 126 10002	100nF 20% 25V
2311	4822 126 13473	220nF 20% 50V
2312	4822 124 41829	1000uF 20% 6.3V
2313▲	5322 122 32654	22nF 10% 63V
2314▲	5322 122 34123	1nF 10% 50V
2315▲	4822 122 33177	10nF 20% 50V
2316	4822 126 11804	330nF 20% 16V
2317▲	5322 122 32654	22nF 10% 63V
2354	4822 126 10002	100nF 20% 25V
2360	5322 122 32661	56pF 5% 50V
2361	5322 122 32661	56pF 5% 50V
2362	4822 126 10002	100nF 20% 25V
2364	4822 126 10002	100nF 20% 25V
2366	4822 126 10002	100nF 20% 25V
2367	4822 124 40756	1uF 20% 100V
2368	4822 121 51252	47nF 5% 63V
2370	4822 122 32627	2.7nF 10% 50V
2371	4822 124 41643	100uF 20% 16V
2376	4822 126 10002	100nF 20% 25V
2378	4822 126 10002	100nF 20% 25V
2379	4822 126 10002	100nF 20% 25V
2380	4822 126 10002	100nF 20% 25V
2381	4822 126 10002	100nF 20% 25V
2382	4822 126 10002	100nF 20% 25V
2383▲	4822 124 40433	47uF 20% 25V
2384	4822 126 13486	15pF 2% 63V
2385	4822 126 10002	100nF 20% 25V
2387▲	4822 124 40433	47uF 20% 25V
2388	4822 126 13486	15pF 2% 63V
2390	4822 126 10002	100nF 20% 25V
2391	4822 122 33175	2.2nF 20% 50V
2392	4822 122 33496	100nF 10% 63V
2393	4822 126 10002	100nF 20% 25V
2394	4822 126 10002	100nF 20% 25V
2395	4822 126 10002	100nF 20% 25V
2396	4822 126 10002	100nF 20% 25V
2397	4822 126 13486	15pF 2% 63V
2399	4822 126 10002	100nF 20% 25V
2455	4822 124 41643	100uF 20% 16V
2460	4822 124 41579	10uF 20% 50V
2464	4822 122 33216	270pF 5% 50V
2465	4822 126 10002	100nF 20% 25V
2466	5322 122 32658	22pF 5% 50V
2500	4822 126 12944	47nF 10% 50V
2502▲	5322 122 32654	22nF 10% 63V
2504▲	5322 122 32654	22nF 10% 63V
2506▲	5322 122 32654	22nF 10% 63V
2508▲	5322 122 32654	22nF 10% 63V
2510▲	5322 122 32654	22nF 10% 63V
2512▲	5322 122 32654	22nF 10% 63V
2514▲	5322 122 32654	22nF 10% 63V
2516▲	5322 122 32654	22nF 10% 63V
2524	5322 121 42667	330nF 5% 63V
2532▲	4822 124 40246	4.7uF 20% 63V
2533	4822 124 40849	330uF 20% 16V
2535	4822 126 13371	56nF 10% 50V
2536	5322 121 42661	330nF 5% 63V
2538	4822 126 10002	100nF 20% 25V
2540	4822 126 10002	100nF 20% 25V
2542	4822 126 10002	100nF 20% 25V
2544	4822 124 22466	1uF 20% 50V
2546	4822 124 22466	1uF 20% 50V
2566	4822 124 41596	22uF 20% 50V
2600	4822 121 42408	220nF 5% 63V
2601	4822 126 13475	220nF 20% 50V
2602	4822 121 42408	220nF 5% 63V
2604	4822 122 33806	820pF 10% 63V
2606	4822 121 51361	5.6nF 2% 160V
2608	4822 126 10002	100nF 20% 25V
2610	4822 124 41579	10uF 20% 50V
2612▲	4822 122 33177	10nF 20% 50V
2614	4822 124 41643	100uF 20% 16V
2616	4822 126 10002	100nF 20% 25V
2620▲	4822 122 33177	10nF 20% 50V
2622▲	4822 122 33177	10nF 20% 50V
2650	4822 124 41643	100uF 20% 16V
2652	4822 122 33128	15nF 10% 63V
2654	4822 122 33128	15nF 10% 63V
2656▲	4822 122 33342	33nF 10% 63V
2658▲	4822 122 33342	33nF 10% 63V
2660	4822 122 32646	5.6nF 10% 50V
2662	4822 122 32646	5.6nF 10% 50V
2666	5322 122 31865	1.5nF 10% 63V
2668	5322 122 31865	1.5nF 10% 63V
2671▲	5322 122 34123	1nF 10% 50V
2672	4822 124 40763	2.2uF 20% 100V
2673▲	5322 122 34123	1nF 10% 50V
2674	4822 124 40763	2.2uF 20% 100V
2676	4822 126 10002	100nF 20% 25V
2678	4822 126 13485	470nF 20% 50V
2680	4822 126 13485	470nF 20% 50V
2682	4822 126 13485	470nF 20% 50V
2684	4822 126 13485	470nF 20% 50V
2700	4822 126 10002	100nF 20% 25V
2702▲	5322 122 34123	1nF 10% 50V
2704	4822 126 10002	100nF 20% 25V
2706▲	5322 122 34123	1nF 10% 50V
2708	4822 124 41643	100uF 20% 16V
2710▲	4822 122 33177	10nF 20% 50V
2712▲	4822 124 40196	220uF 20% 16V
2714	4822 124 41643	100uF 20% 16V
2716	4822 124 41643	100uF 20% 16V
3200	4822 051 20221	220Ω 5% 0.1W
3201	4822 051 20182	1k8 5% 0.1W
3202	4822 051 20182	1k8 5% 0.1W
3203	4822 051 10102	1k 2% 0.25W
3204	4822 051 10102	1k 2% 0.25W
3205	4822 051 20104	100k 5% 0.1W
3206	4822 051 20101	100Ω 5% 0.1W
3207	4822 051 10102	1k 2% 0.25W
3208	4822 051 20101	100Ω 5% 0.1W
3209▲	4822 051 20008	0Ω 5% 0.1W
3212	4822 051 20275	27Ω 5% 0.1W
3213	4822 051 10102	1k 2% 0.25W
3214	4822 051 22153	15k 5% 0.1W
3215▲	4822 051 20472	4k7 5% 0.1W
3216	4822 051 20103	10k 5% 0.1W
3217	4822 051 20562	5k6 5% 0.1W
3219▲	4822 051 20472	4k7 5% 0.1W
3220	4822 051 20682	6k8 5% 0.1W
3221	4822 051 20182	1k8 5% 0.1W
3222	4822 051 20182	1k8 5% 0.1W
3225	4822 051 20473	47k 5% 0.1W
3226	4822 051 20473	47k 5% 0.1W
3227	4822 051 20223	22k 5% 0.1W
3228	4822 051 20223	22k 5% 0.1W
3229	4822 051 20471	470Ω 5% 0.1W
3233	4822 051 20471	470Ω 5% 0.1W
3234	4822 051 10102	1k 2% 0.25W
3235	4822 051 10102	1k 2% 0.25W
3236▲	4822 124 41643	100uF 20% 16V
3237	4822 051 10102	1k 2% 0.25W
3238	4822 051 10102	1k 2% 0.25W
3239	4822 051 10102	1k 2% 0.25W
3241	4822 051 20103	10k 5% 0.1W
3243	4822 051 10102	1k 2% 0.25W
3244	4822 051 10102	1k 2% 0.25W
3245	4822 051 10102	1k 2% 0.25W
3246	4822 051 10102	1k 2% 0.25W
3300▲	4822 052 10828	8U2 5% 0.33W
3303	4822 051 20474	470k 5% 0.1W
3304	4822 051 20682	6k8 5% 0.1W
3305	4822 051 20223	22k 5% 0.1W
3306	4822 051 20242	2k4 5% 0.1W
3310	4822 051 20122	1k2 5% 0.1W
3311	4822 051 20103	10k 5% 0.1W
3313	4822 117 11135	1k5 1% 0.1W
3314	4822 051 20103	10k 5% 0.1W
3315	4822 051 20104	100k 5% 0.1W
3316	4822 051 20103	10k 5% 0.1W
3317	4822 051 20562	5k6 5% 0.1W
3318	4822 051 20752	7k5 5% 0.1W
3352▲	4822 051 20008	0Ω 5% 0.1W
3354	4822 051 20243	24k 5% 0.1W
3355	4822 051 20751	750Ω 5% 0.1W
3357	4822 051 20751	750Ω 5% 0.1W
3358	4822 051 20151	150Ω 5% 0.1W
3359	4822 051 20151	150Ω 5% 0.1W
3361	4822 100 42201	200 20% 1W
3364	4822 051 20151	150Ω 5% 0.1W
3365	4822 051 20151	150Ω 5% 0.1W
3366	4822 051 20151	150Ω 5% 0.1W
3367	4822 051 20151	150Ω 5% 0.1W
3373▲	4822 051 20008	0Ω 5% 0.1W
3376	4822 051 20753	75k 5% 0.1W
3380	4822 051 20101	100Ω 5% 0.1W
3381▲	4822 052 10109	10Ω 5% 0.33W
3382	4822 051 20471	470Ω 5% 0.1W
3387	4822 051 20821	820Ω 5% 0.1W
3391	4822 051 20101	100Ω 5% 0.1W
3392	4822 051 20471	470Ω 5% 0.1W
3393	4822 051 20479	47Ω 5% 0.1W
3395	4822 051 20101	100Ω 5% 0.1W
3396	4822 051 10102	1k 2% 0.25W
3397	4822 051 20332	3k3 5% 0.1W
3434	4822 051 10102	1k 2% 0.25W
3435	4822 051 10102	1k 2% 0.25W
3436	4822 051 10102	1k 2% 0.25W
3437	4822 051 10102	1k 2% 0.25W
3438	4822 051 10102	1k 2% 0.25W
3439	4822 051 10102	1k 2% 0.25W
3460	4822 051 10102	1k 2% 0.25W
3461	4822 051 20222	2k2 5% 0.1W
3462	4822 051 20222	2k2 5% 0.1W
3463	4822 051 10102	1k 2% 0.25W
3464	4822 051 10102	1k 2% 0.25W
3465	4822 051 20681	680Ω 5% 0.1W
3466	4822 051 20221	220Ω 5% 0.1W
3467	4822 051 20221	220Ω 5% 0.1W
3468	4822 051 20221	220Ω 5% 0.1W
3469	4822 051 10102	1k 2% 0.25W
3470▲	4822 051 20472	4k7 5% 0.1W
3503	4822 051 20101	100Ω 5% 0.1W
3508	4822 051 20331	330Ω 5% 0.1W
3510	4822 051 20331	330Ω 5% 0.1W
3518	4822 051 20222	2k2 5% 0.1W
3521	4822 051 20684	680k 5% 0.1W
3522	4822 051 20103	10k 5% 0.1W
3524	4822 051 20473	47k 5% 0.1W
3532	4822 051 20394	390k 5% 0.1W
3534	4822 051 20274	270k 5% 0.1W
3535▲	4822 052 10688	6U8 5% 0.33W
3536	4822 051 20101	100Ω 5% 0.1W
3540	4822 051 20829	82Ω 5% 0.1W
3542	4822 051 20829	82Ω 5% 0.1W
3544	4822 051 20829	82Ω 5% 0.1W
3546	4822 051 20471	470Ω 5% 0.1W
3548	4822 051 20221	220Ω 5% 0.1W
3549	4822 051 10102	1k 2% 0.25W
3550	4822 051 20101	100Ω 5% 0.1W
3551	4822 051 10102	1k 2% 0.25W
3552▲	4822 051 20109	10Ω 5% 0.1W
3566	4822 051 20103	10k 5% 0.1W
3567	4822 051 10102	1k 2% 0.25W
3567	4822 051 20151	150Ω 5% 0.1W
3568	4822 051 20474	470k 5% 0.1W
3569	4822 051 20104	100k 5% 0.1W
3604	4822 051 20562	5k6 5% 0.1W
3606	4822 051 20101	100Ω 5% 0.1W
3610	4822 051 20101	100Ω 5% 0.1W
3616▲	4822 052 10278	2U7 5% 0.33W
3660▲	4822 051 20681	680Ω 5% 0.1W
366	4822 051 20681	680Ω 5% 0.1W
3671▲	4822 051 20109	10Ω 5% 0.1W
3671	4822 051 20471	470Ω 5% 0.1W
3672	4822 051 20103	10k 5% 0.1W
3673▲	4822 051 20109	10Ω 5% 0.1W
3673	4822 051 20471	470Ω 5% 0.1W
3674	4822 051 20103	10k 5% 0.1W
3676▲	4822 052 10109	10Ω 5% 0.33W
3678	4822 051 20101	100Ω 5% 0.1W
3680	4822 051 20101	100Ω 5% 0.1W
3701	4822 051 20104	100k 5% 0.1W
3702	4822 051 20103	10k 5% 0.1W
3704	4822 051 20104	100k 5% 0.1W
3706	4822 051 20103	10k 5% 0.1W
3712▲	4822 052 10189	18Ω 5% 0.33W
3715	4822 051 20479	47Ω 5% 0.1W
3716	4822 051 10102	1k 2% 0.25W
3717	4822 051 20479	47Ω 5% 0.1W
3718	4822 051 10102	1k 2% 0.25W
3719	4822 051 20103	10k 5% 0.1W
3720	4822 051 20103	10k 5% 0.1W
3722	4822 051 20473	47k 5% 0.1W
3724	4822 051 20103	10k 5% 0.1W
3725	4822 051 20103	10k 5% 0.1W
3726	4822 051 20623	62k 5% 0.1W
4xxx	4822 051 20008	0Ω 5% 0.1W
5201	4822 157 51216	5.6uH 10%
5202	4822 157 51216	5.6uH 10%
5301	4822 157 61123	6.8uH 10%
5302	4822 157 53634	5.6uH 10%
5303	4822 157 53634	5.6uH 10%

Spare parts list / Stükliste / Liste des pièces

5378	4822 157 53634	5.6uH 10%
5380	4822 157 53634	5.6uH 10%
5381	4822 157 51216	5.6uH 10%
5454	4822 157 53634	5.6uH 10%
5465	4822 157 52392	27uH 10%
5606	4822 156 21293	1500uH 5%
6218▲	4822 130 34173	BZX79-C5V6
6219▲	4822 130 34173	BZX79-C5V6
6220	4822 130 80954	LLZ-C5V6
6221▲	4822 130 34173	BZX79-C5V6
6222▲	4822 130 34173	BZX79-C5V6
6223	4822 130 80954	LLZ-C5V6
6224▲	4822 130 34173	BZX79-C5V6
6225▲	4822 130 34173	BZX79-C5V6
6226▲	4822 130 34173	BZX79-C5V6
6227	4822 130 80125	BZX84-C5V6
6228	4822 130 80125	BZX84-C5V6
6229▲	4822 130 34173	BZX79-C5V6
6230▲	4822 130 34173	BZX79-C5V6
6231▲	4822 130 34173	BZX79-C5V6
6232▲	4822 130 34173	BZX79-C5V6
6233	4822 130 80125	BZX84-C5V6
6234▲	4822 130 34173	BZX79-C5V6
6235▲	4822 130 34173	BZX79-C5V6
6236▲	4822 130 34173	BZX79-C5V6
6237▲	4822 130 34173	BZX79-C5V6
6238▲	4822 130 34173	BZX79-C5V6
6239▲	4822 130 34173	BZX79-C5V6
6240▲	4822 130 34173	BZX79-C5V6
6241	4822 130 80125	BZX84-C5V6
6242	4822 130 80954	LLZ-C5V6
6243▲	4822 130 34173	BZX79-C5V6
6304	4822 130 80542	BZX84-C33
6310▲	5322 130 31928	BAS16
6311▲	5322 130 31928	BAS16
6312▲	5322 130 31928	BAS16
6522	5322 130 33725	BZX84-C22
6523▲	5322 130 31928	BAS16
6526▲	5322 130 31928	BAS16
6546	5322 130 33671	BZX84-C6V2
6550▲	5322 130 34331	BAV70
7200	4822 209 90032	P90CE201AEB/00
7202	4822 900 10584	Software
7204	5322 209 11306	HEF4094BT
7206	4822 209 90022	HY62256ALJ-70
7212	4822 209 33251	ST24C16CB1
7214▲	5322 130 41982	BC848B
7215	5322 130 42136	BC848C
7216	5322 130 42136	BC848C
7217	5322 130 42136	BC848C
7228	5322 130 42136	BC848C
7311	5322 130 42136	BC848C
7312	5322 130 41983	BC858B
7352	4822 209 90029	TDA9141/N1
7358	4822 209 12635	TDA4665/V3
7365	4822 130 42513	BC858C
7380	5322 209 11548	74HC14D
7390	5322 130 42136	BC848C
7395	5322 130 42136	BC848C
7463▲	5322 130 41982	BC848B
7466	5322 130 41983	BC858B
7488▲	5322 130 41982	BC848B
7500	4822 209 90035	TDA4780/V3
7518	4822 209 73852	PMBT2369
7536	5322 130 41983	BC858B
7550	5322 130 42136	BC848C
7566	5322 130 42136	BC848C
7567	5322 130 42136	BC848C
7568	5322 130 42136	BC848C
7600	4822 209 32863	TDA9840/V2
7650	4822 209 33293	TDA9860/V2
7710	4822 209 90024	TDA2822M
7715	5322 130 42136	BC848C
7716	5322 130 42136	BC848C
7719	4822 130 42513	BC858C
7720	5322 130 42136	BC848C
7722	5322 130 42136	BC848C
7723	5322 130 42136	BC848C
7724	5322 130 42136	BC848C

FF-Supply drive [N]

Various

1015	4822 310 32214	FFS drive kit
2150	4822 122 33515	82pF 5% 63V
2152	4822 121 42729	1.5nF 1% 250V
2154	4822 126 10002	100nF 20% 25V
2155	4822 126 10002	100nF 20% 25V
2157	4822 124 41579	10uF 20% 50V
2158	4822 122 33175	2.2nF 20% 50V
2160	5322 122 34099	470pF 10% 63V
2164	4822 126 10002	100nF 20% 25V
2166	4822 122 31746	1nF 2% 63V
2167	4822 126 10002	100nF 20% 25V
2170	4822 124 40242	1uF 20% 63V
2171	5322 122 34099	470pF 10% 63V
2173	4822 122 33175	2.2nF 20% 50V
2175	5322 122 31866	6.8nF 10% 63V
2180	4822 126 10002	100nF 20% 25V
2184▲	4822 122 33342	33nF 10% 63V
2191	4822 126 10002	100nF 20% 25V
3150	4822 051 20823	82k 5% 0.1W
3152	4822 116 52219	330Ω 5% 0.5W
3154	4822 116 52207	1k2 5% 0.5W
3155	4822 051 20161	160Ω 5% 0.1W
3157	4822 116 52252	180k 5% 0.5W
3158	4822 051 20153	15k 5% 0.1W
3160▲	4822 052 11109	10Ω 5% 0.5W
3162	4822 052 11399	39Ω 5% 0.5W
3164	4822 051 20229	22Ω 5% 0.1W
3166	4822 051 20473	47k 5% 0.1W
3167	4822 051 20223	22k 5% 0.1W
3170	4822 051 20133	13k 5% 0.1W
3171	4822 051 20562	5k6 5% 0.1W
3173	4822 051 20153	15k 5% 0.1W
3174	4822 051 20103	10k 5% 0.1W
3175	4822 051 10102	1k 2% 0.25W
3177	4822 117 10354	22k 1% 0.1W
3178	4822 117 10833	10k 1% 0.1W
3181	4822 116 52175	100Ω 5% 0.5W
3182	4822 051 20221	220Ω 5% 0.1W
3183	4822 050 21604	160k 1% 0.6W
3184	4822 051 20333	33k 5% 0.1W
3185▲	4822 051 20008	0Ω 5% 0.1W
3186▲	4822 050 22702	2k7 1% 0.6W
3187	4822 101 11186	470Ω 30% LIN
3190	4822 051 20223	22k 5% 0.1W
3191	4822 051 20223	22k 5% 0.1W
3999	4822 051 20279	27Ω 5% 0.1W
5152	4822 157 51195	1uH 20%
6154	4822 130 42488	BYD33D
6157	4822 130 34174	BZX79-C4V7
6160▲	4822 130 31631	BYV10-20
6173	4822 130 34382	BZX79-F8V2
7150	4822 209 90025	MC44603P
7170▲	5322 130 41982	BC848B
7180▲	4822 209 32126	SOC1012T
7185	4822 209 81397	TL431CLP
7190▲	5322 130 42136	BC848C

Eco Low Power Standby [AU]

Various

1080	4822 212 31862	ELPS 28'-29'
1080	4822 212 31863	ELPS 33'
▲	4822 256 30496	Fuse holder cvcl
	4822 265 20699	2P male v 2.5 yellow
▲	4822 265 30389	2P male
	4822 265 31245	3P male v 2.5
	4822 265 20696	2P male v 2.5 rec
1011	4822 253 30467	Fuse T6.3A
1012▲	4822 071 53151	Fuse TC.315A
2139▲	4822 122 40602	1nF 20% 400V
2140	4822 124 21511	2200uF 20% 25V
2141▲	4822 122 40602	1nF 20% 400V
2142▲	4822 124 40196	220uF 20% 16V
2143▲	4822 124 40196	220uF 20% 16V
2145	4822 121 70141	33nF 5% 400V
2147▲	4822 121 40487	100nF 10% 400V
2148	4822 121 70587	680nF 10% 250V
2149	4822 124 41596	22uF 20% 50V
3131	4822 116 52195	47Ω 5% 0.5W
3132	4822 116 52175	100Ω 5% 0.5W
3133	4822 116 52175	100Ω 5% 0.5W
3134	4822 050 11002	1k 1% 0.4W
3135	4822 116 52284	47k 5% 0.5W
3137	4822 116 83864	10k 5% 0.5W
3138	4822 113 80678	2U7 10% 15W
3139	4822 116 52175	100Ω 5% 0.5W
3140	4822 116 52215	220Ω 5% 0.5W
3141	4822 116 52257	22k 5% 0.5W
3142	4822 116 52243	1k5 5% 0.5W
3143	4822 116 83864	10k 5% 0.5W
3144▲	4822 116 21217	VDR 1mA/423V 800V
3145	4822 111 20403	470Ω 10%
3146▲	4822 116 40223	P.T.C./P.T.C.
3147▲	4822 116 40223	P.T.C./P.T.C.
3148▲	4822 113 80603	1.5Ω 10% 7W
3149	4822 116 52175	100Ω 5% 0.5W
3998	4822 116 52175	100Ω 5% 0.5W
3998	4822 116 52211	150Ω 5% 0.5W
3106▲	4822 116 21217	VDR 1mA/423V 800V
5143▲	4822 157 63821	Mains filter coil
5144▲	4822 157 10291	Mains filter CU28D5
5145	4822 148 81411	Standby transformer
6138▲	4822 130 30621	1N4148
6139▲	4822 130 30621	1N4148
6140	4822 130 34278	BZX79-C6V8
6141	4822 130 42488	BYD33D
6143▲	4822 130 30621	1N4148
6144	4822 130 34379	BZX79-C27
6145	4822 130 34379	BZX79-C27
6146	4822 130 42488	BYD33D
6147	4822 130 42488	BYD33D
6148	4822 130 42488	BYD33D
6149▲	4822 130 30621	1N4148
7137	4822 130 40937	BC548B
7138▲	4822 130 44197	BC558B
7139▲	4822 130 44197	BC558B
7140▲	5322 130 60068	BC558C

Mains switch panel [K]

Various

	4822 265 20699	2P male v 2.5 yellow
▲	4822 265 40596	2P male
	4822 276 13422	Mains switch GFL2
▲	4822 276 13498	Mains switch GFL4
1002	4822 212 31837	Mains switch panel GFL4
1002	4822 212 31843	Mains switch panel GFL2

Keyboard panel [B]

Various

	4822 265 41462	7P male v 1.25
	4822 265 41451	9P male v 1.25
	4822 276 13396	Tack switch
1001	4822 212 31839	Keyboard panel GFL4
1001	4822 212 31845	Keyboard panel GFL2

Connector panel [H]

Various

	4822 265 41463	Headp+Cinch+SVH S GFL4
	4822 267 20465	Headp+Cinch+SVH S GFL2
	4822 265 41451	9P male v 1.25
	4822 265 31248	3P male v 1.25
1003	4822 212 31838	Connector panel GFL4
1003	4822 212 31844	Connector panel GFL2
2216	5322 122 31866	6.8nF 10% 63V
2236	5322 122 31866	6.8nF 10% 63V
2240	4822 126 10326	180pF 5% 63V
2244	4822 126 10326	180pF 5% 63V
2251	4822 122 33496	100nF 10% 63V
2251	4822 126 10002	100nF 20% 25V
3201▲	4822 053 21475	4M7 5% 0.5W
3214	4822 051 20189	18Ω 5% 0.1W
3215	4822 051 20189	18Ω 5% 0.1W
3216	4822 051 20103	10k 5% 0.1W
3234	4822 051 20189	18Ω 5% 0.1W
3235	4822 051 20189	18Ω 5% 0.1W
3236	4822 051 20103	10k 5% 0.1W
3239	4822 051 20223	22k 5% 0.1W
3240	4822 051 10471	470Ω 2% 0.25W
3240	4822 051 20471	470Ω 5% 0.1W
3241▲	4822 116 83953	75Ω 5% 0.125W
3244	4822 051 20471	470Ω 5% 0.1W
3245	4822 051 20223	22k 5% 0.1W
3251▲	4822 116 83953	75Ω 5% 0.125W
6214	4822 130 82346	LLZ-C27
6215	4822 130 82346	LLZ-C27
6234	4822 130 82346	LLZ-C27
6235	4822 130 82346	LLZ-C27
6250	4822 130 81513	LLZ-C6V8
6251	4822 130 81513	LLZ-C6V8
6253	4822 130 81513	LLZ-C6V8

RC5 panel [X]

Various

	4822 265 41462	7P male v 1.25
	4822 256 92275	LED holder 3-FOLD GFL2
	4822 256 92276	LED holder 3-FOLD GFL4
1004	4822 212 31841	RC5 panel GFL4
1004	4822 212 31846	RC5 panel GFL2
1100	4822 212 23251	IR receiver
1101	4822 212 31399	IR receiver
2651	4822 124 41715	220uF 20% 6.3V
2660▲	4822 124 40196	220uF 20% 16V
3600	4822 051 20473	47k 5% 0.1W
3600	4822 116 52284	47k 5% 0.5W
3602	4822 116 52284	47k 5% 0.5W
3604	4822 051 20473	47k 5% 0.1W
3605	4822 051 20473	47k 5% 0.1W
3608	4822 051 20473	47k 5% 0.1W
3640	4822 051 20181	180Ω 5% 0.1W

3641▲	4822 051 20472	4k7 5% 0.1W	
3642▲	4822 051 20472	4k7 5% 0.1W	
3643	4822 051 20181	180Ω 5% 0.1W	
3656	4822 050 11002	1k 1% 0.4W	
3659	4822 116 52176	10Ω 5% 0.5W	
3659	4822 116 52195	47Ω 5% 0.5W	
3660	4822 116 52179	12Ω 5% 0.5W	
3660	4822 116 52195	47Ω 5% 0.5W	
3661	4822 051 20101	100Ω 5% 0.1W	
3662▲	4822 051 20472	4k7 5% 0.1W	
4xxx	4822 051 10008	0Ω 5% 0.25W	

5651	4822 157 53906	47µH

6640	4822 130 83414	TLHR4405
6641	4822 130 90313	TLHG4400

7640	5322 130 41983	BC858B
7643	5322 130 41983	BC858B
7662	5322 130 44593	BC369

North/South panel [AP]

Various

1028	4822 212 31853	North/South panel
	4822 265 31243	5P male v 2.5
	4822 265 41468	28P strip

2450	4822 121 51049	15nF 1% 63V
2452	4822 121 41857	10nF 5% 250V

3452	4822 116 52175	100Ω 5% 0.5W
3454	4822 116 52256	2k2 5% 0.5W
3456	4822 116 52244	15k 5% 0.5W
3463	4822 116 83864	10k 5% 0.5W
3464	4822 116 80676	1Ω5 5% 0.5W
3465	4822 116 80676	1Ω5 5% 0.5W

5450	4822 157 71414	1000uH 10%
5452	4822 157 71033	N/S correction coil

6452▲	4822 130 30821	1N4148
6453	4822 130 31024	BZX79-C18
6454▲	4822 130 34488	BZX79-C20
6455▲	4822 130 30821	1N4148

7450	4822 130 83441	J108
7451	4822 130 83441	J108

Scavem panel [V]

Various

1041	4822 212 31857	Scavem panel
1041	4822 212 31866	Scavem France
	4822 265 31244	3P male v 2.5
	4822 265 41448	7P male v 2.5 grey

2604	5322 124 21189	100µF 20% 40V
2605▲	5322 122 34123	1nF 10% 50V
2606▲	4822 124 41525	100µF 20% 25V
2607▲	5322 122 34123	1nF 10% 50V
2620▲	4822 122 33342	33nF 10% 63V
2621	4822 122 33496	100nF 10% 63V
2622	4822 122 33496	100nF 10% 63V
2624▲	4822 122 33342	33nF 10% 63V
2625	4822 124 40255	100µF 20% 63V
2636	4822 122 33496	100nF 10% 63V
2637	4822 122 33496	100nF 10% 63V
2638	4822 122 33496	100nF 10% 63V
2639	4822 122 33496	100nF 10% 63V
2647	4822 124 40255	100uF 20% 63V
2661	4822 124 41596	22uF 20% 50V
2671	5322 122 32268	470pF 10% 50V
2672	5322 122 32268	470pF 10% 50V
2680	4822 124 41596	22uF 20% 50V
2800	4822 124 41596	22uF 20% 50V
2802▲	4822 122 33342	33nF 10% 63V

2804	4822 122 33496	100nF 10% 63V
2805	4822 122 33514	68pF 5% 50V
2805	5322 122 32661	56pF 5% 50V
2806	5322 122 31946	27pF 5% 63V
2807	5322 122 32452	47pF 5% 63V
2813▲	4822 122 33342	33nF 10% 63V
2815	4822 122 33891	3,3nF 10% 63V
2816	4822 122 33216	270pF 5% 50V
2816	4822 122 33575	220pF 5% 50V
2819▲	4822 122 33342	33nF 10% 63V
2820▲	4822 122 33342	33nF 10% 63V
2821▲	5322 122 32269	6.8pF 5% 50V
2821	5322 122 32967	5.6pF 10% 63V
2822▲	4822 122 33342	33nF 10% 63V
2825▲	4822 122 33177	10nF 20% 50V
2835	4822 122 33891	3,3nF 10% 63V
2839▲	4822 122 33342	33nF 10% 63V
2840▲	4822 122 33342	33nF 10% 63V
2841	5322 122 32481	15pF 5% 50V
2841	4822 122 32139	12pF 2% 63V
2842▲	4822 122 33342	33nF 10% 63V
2845▲	4822 122 33177	10nF 20% 50V
2855	4822 122 33891	3,3nF 10% 63V
2856	5322 122 32531	100pF 5% 50V
2856	5322 122 32515	82pF 5% 63V
2859▲	4822 122 33342	33nF 10% 63V
2860▲	4822 122 33342	33nF 10% 63V
2861▲	5322 122 32269	6.8pF 5% 50V
2861	5322 122 32967	5.6pF 10% 63V
2862▲	4822 122 33342	33nF 10% 63V
2865	5322 122 32531	100pF 5% 50V
2886▲	4822 122 33177	10nF 20% 50V

3606	4822 051 20478	4Ω7 5% 0.1W
3608	4822 051 20478	4Ω7 5% 0.1W
3609▲	4822 052 10228	2Ω2 5% 0.33W
3610▲	4822 052 10228	2Ω2 5% 0.33W
3612	4822 051 10478	4Ω7 5% 0.25W
3613	4822 051 10478	4Ω7 5% 0.25W
3614	4822 051 10478	4Ω7 5% 0.25W
3615	4822 051 10478	4Ω7 5% 0.25W
3630▲	4822 053 10681	680Ω 5% 1W
3633	4822 051 20182	1k8 5% 0.1W
3634	4822 051 20122	1k2 5% 0.1W
3635	4822 116 52191	33Ω 5% 0.5W
3637▲	4822 053 10181	180Ω 5% 1W
3638▲	4822 053 10681	680Ω 5% 1W
3640	4822 051 20103	10k 5% 0.1W
3641	4822 051 20182	1k8 5% 0.1W
3642	4822 051 20122	1k2 5% 0.1W
3643	4822 116 52191	33Ω 5% 0.5W
3645▲	4822 052 10339	33Ω 5% 0.33W
3647▲	4822 052 10339	33Ω 5% 0.33W
3648	4822 051 20101	100Ω 5% 0.1W
3652	4822 051 20331	330Ω 5% 0.1W
3653	4822 051 20471	470Ω 5% 0.1W
3654	4822 051 20331	330Ω 5% 0.1W
3655	4822 051 20471	470Ω 5% 0.1W
3656	4822 051 20331	330Ω 5% 0.1W
3657	4822 051 20471	470Ω 5% 0.1W
3658	4822 051 20331	330Ω 5% 0.1W
3659	4822 051 20471	470Ω 5% 0.1W
3661	4822 116 83864	10k 5% 0.5W
3670	4822 051 20822	8k2 5% 0.1W
3671	4822 051 20822	8k2 5% 0.1W
3672	4822 051 10102	1k 2% 0.25W
3680	4822 051 20103	10k 5% 0.1W
3681	4822 116 83864	10k 5% 0.5W
3682	4822 051 20101	100Ω 5% 0.1W
3800▲	4822 052 10228	2Ω2 5% 0.33W
3802▲	4822 051 20472	4k7 5% 0.1W
3803	4822 051 20562	5k6 5% 0.1W
3804	4822 051 10102	1k 2% 0.25W
3805	4822 051 20101	100Ω 5% 0.1W
3806	4822 051 20561	560Ω 5% 0.1W
3807▲	4822 051 20121	120Ω 5% 0.1W
3812▲	4822 051 20472	4k7 5% 0.1W
3813▲	4822 051 20472	4k7 5% 0.1W
3815	4822 116 52243	1k5 5% 0.5W
3816	4822 051 20229	22Ω 5% 0.1W
3816	4822 051 20279	27Ω 5% 0.1W
3819▲	4822 052 10109	10Ω 5% 0.33W
3820	4822 051 20471	470Ω 5% 0.1W
3821	4822 051 20101	100Ω 5% 0.1W
3822	4822 051 20471	470Ω 5% 0.1W
3823	4822 051 20101	100Ω 5% 0.1W
3824	4822 116 52207	1k2 5% 0.5W
3825	4822 051 20569	56Ω 5% 0.1W
3826	4822 051 20222	2k2 5% 0.1W
3832▲	4822 051 20472	4k7 5% 0.1W
3833▲	4822 051 20472	4k7 5% 0.1W
3835	4822 116 52243	1k5 5% 0.5W
3837▲	4822 051 20008	0Ω 5% 0.1W
3839▲	4822 052 10109	10Ω 5% 0.33W
3840	4822 051 20151	150Ω 5% 0.1W
3841	4822 051 20101	100Ω 5% 0.1W
3842	4822 051 20151	150Ω 5% 0.1W
3843	4822 051 20101	100Ω 5% 0.1W
3844	4822 116 52207	1k2 5% 0.5W
3845	4822 051 20569	56Ω 5% 0.1W
3846	4822 051 20222	2k2 5% 0.1W
3852▲	4822 051 20472	4k7 5% 0.1W
3853▲	4822 051 20472	4k7 5% 0.1W
3855	4822 116 52243	1k5 5% 0.5W
3856	4822 116 52197	56Ω 5% 0.5W
3857	4822 051 20821	820Ω 5% 0.1W
3859▲	4822 052 10109	10Ω 5% 0.33W
3860	4822 051 20471	470Ω 5% 0.1W
3861	4822 051 20479	47Ω 5% 0.1W
3862	4822 051 20471	470Ω 5% 0.1W
3863	4822 051 20479	47Ω 5% 0.1W
3864	4822 116 52224	470Ω 5% 0.5W
3865	4822 051 10102	1k 2% 0.25W
3866	4822 051 20689	68Ω 5% 0.1W
3869	4822 051 20272	2k7 5% 0.1W
3880▲	4822 051 20472	4k7 5% 0.1W
3881	4822 051 20473	47k 5% 0.1W
3882	4822 051 10102	1k 2% 0.25W
3883	4822 051 10102	1k 2% 0.25W
3884	4822 051 20103	10k 5% 0.1W
3886	4822 051 10102	1k 2% 0.25W
3887	4822 051 20272	2k7 5% 0.1W
3888	4822 051 10102	1k 2% 0.25W
3999	4822 051 20339	33Ω 5% 0.1W
3999	4822 051 20479	47Ω 5% 0.1W
4xxx	4822 051 20008	0Ω 5% 0.1W

5612	4822 157 63507	Ferrite bead
5614	4822 157 63507	Ferrite bead
5806	4822 157 53066	15uH 10%
5807	4822 157 53575	3.3uH 10%
5807	4822 157 60123	6.8uH 10%
5816	4822 157 63507	Ferrite bead
5856	4822 157 63507	Ferrite bead

6610	4822 130 34233	BZX79-C5V1
6616	4822 130 34233	BZX79-C5V1
6630▲	4822 130 30821	1N4148
6638▲	4822 130 30821	1N4148
6661▲	4822 130 30821	1N4148
6662▲	4822 130 30821	1N4148
6680▲	4822 130 30821	1N4148
6805	5322 130 34337	BAV99
6836	5322 130 32103	BAT83
6837	5322 130 32103	BAT83
6853	4822 130 34382	BZX79-C8V2
6880▲	4822 130 30821	1N4148
6886▲	4822 130 34173	BZX79-C5V6

7607▲	5322 130 41982	BC848B
7610	4822 130 40823	BD135
7611	4822 130 42589	BF370
7612	4822 130 40823	BD135
7613	4822 130 40824	BD136
7614	4822 130 40823	BD135
7615	4822 130 40824	BD136
7616	4822 130 40823	BD135
7617	4822 130 42589	BF370
7618	4822 130 60511	BC847B
7619	5322 130 60508	BC857B
7620	4822 130 60511	BC847B
7621	5322 130 60508	BC857B
7682▲	5322 130 41982	BC848B
7802▲	5322 130 41982	BC848B
7810	4822 209 63447	MC1496D
7830	4822 209 63447	MC1496D
7850	4822 209 63447	MC1496D
7865▲	5322 130 41982	BC848B
7881	4822 209 73852	PMBT2369
7886▲	5322 130 41982	BC848B

Geometry panel (DDP) [J]

Various

1029	4822 212 31859	Geometry
	4822 265 51383	22P strip
1310	5322 242 73686	Crystal 12 MHz

2304	4822 124 41579	10uF 20% 50V
2306	4822 124 40242	1uF 20% 63V
2308	5322 122 32658	22pF 5% 50V
2309	5322 122 32658	22pF 5% 50V
2312	5322 122 32452	47pF 5% 63V
2314	4822 124 41579	10uF 20% 50V
2315	4822 126 10002	100nF 20% 25V
2316	4822 126 10002	100nF 20% 25V
2317	4822 126 10002	100nF 20% 25V
2318	4822 124 40242	1uF 20% 63V
2319	4822 122 33575	220pF 5% 50V
2320	5322 116 80853	560pF 5% 63V
2321	4822 126 10002	100nF 20% 25V
2322▲	5322 122 34123	1nF 10% 50V
2326	4822 126 10002	100nF 20% 25V
2327	4822 126 10002	100nF 20% 25V
2328	4822 126 10002	100nF 20% 25V
2330	4822 122 32535	680pF 10% 63V
2331	4822 126 10002	100nF 20% 25V
2332	4822 126 10002	100nF 20% 25V
2334▲	4822 122 33177	10nF 20% 50V
2338▲	4822 122 33177	10nF 20% 50V
2345	4822 126 10002	100nF 20% 25V
2353	4822 124 40184	1000uF 20% 10V
2354	4822 124 41584	100uF 20% 10V
2355	4822 124 41584	100uF 20% 10V
2357	4822 124 41584	100uF 20% 10V
2359▲	4822 124 41525	100uF 20% 25V
2360	5322 122 32452	47pF 5% 63V
2362	4822 126 10002	100nF 20% 25V
2390	5322 122 34099	470pF 10% 63V
2391	4822 126 10002	100nF 20% 25V
2392	5322 122 34099	470pF 10% 63V
2394	4822 126 13483	330pF 10% 500V

3305	4822 051 10102	1k 2% 0.25W
3306	4822 051 20333	33k 5% 0.1W
3307	4822 051 20222	2k2 5% 0.1W
3308	4822 051 10102	1k 2% 0.25W
3309	4822 051 20103	10k 5% 0.1W
3310	4822 051 20105	1M 5% 0.1W
3311	4822 050 11002	1k 1% 0.4W
3312	4822 051 20332	3k3 5% 0.1W
3314	4822 051 20101	100Ω 5% 0.1W
3315	4822 051 20101	100Ω 5% 0.1W
3316	4822 051 20103	10k 5% 0.1W
3317	4822 051 10102	1k 2% 0.25W
3318	4822 051 10102	1k 2% 0.25W
3319	4822 051 20222	2k2 5% 0.1W
3320	4822 051 20391	390Ω 5% 0.1W
3323	4822 051 20104	100k 5% 0.1W
3324	4822 116 52175	100Ω 5% 0.5W
3326	4822 051 20105	1M 5% 0.1W
3327	4822 051 20474	470k 5% 0.1W
3328	4822 051 20473	47k 5% 0.1W
3329	4822 116 52305	820k 5% 0.5W
3330	4822 116 83864	10k 5% 0.5W
3331	4822 051 20474	470k 5% 0.1W
3332	4822 051 20101	100Ω 5% 0.1W
3333	4822 051 20473	47k 5% 0.1W
3334	4822 051 20473	47k 5% 0.1W
3336	4822 116 52283	4k7 5% 0.5W
3337	4822 051 10102	1k 2% 0.25W
3338	4822 051 20122	1k2 5% 0.1W
3339	4822 051 20681	680Ω 5% 0.1W
3341	4822 051 20391	390Ω 5% 0.1W
3342	4822 117 11139	1k5 1% 0.1W
3343	4822 050 23601	360Ω 1% 0.6W
3344	4822 050 23601	360Ω 1% 0.6W
3345▲	4822 050 21002	1k 1% 0.6W
3346▲	4822 050 21002	1k 1% 0.6W
3351	4822 051 10102	1k 2% 0.25W
3352	4822 051 20332	3k3 5% 0.1W
3353▲	4822 052 10338	3Ω3 5% 0.33W
3357▲	4822 052 10129	12Ω 5% 0.33W
3359	4822 050 11002	1k 1% 0.4W
3360	4822 050 11002	1k 1% 0.4W
3361	4822 051 20274	270k 5% 0.1W
3363	4822 051 20104	100k 5% 0.1W
3364	4822 051 20273	27k 5% 0.1W
3366	4822 116 52238	12k 5% 0.5W
3387	4822 051 10102	1k 2% 0.25W
3388	4822 051 20339	33Ω 5% 0.1W
3389	4822 051 20334	330k 5% 0.1W
3390	4822 051 20104	100k 5% 0.1W
3391	4822 051 20103	10k 5% 0.1W
3392▲	4822 051 20472	4k7 5% 0.1W
3393	4822 051 20104	100k 5% 0.1W
3394	4822 051 20824	820k 5% 0.1W
3395	4822 116 52284	47k 5% 0.5W
3999	4822 051 20279	27Ω 5% 0.1W
4xxx	4822 051 20008	0Ω 5% 0.1W

5353	4822 158 10604	6.8uH 10%
5354	4822 158 10604	6.8uH 10%

6306	4822 130 34441	BZX79-C22
6307▲	4822 130 34173	BZX79-F5V6
6316▲	4822 130 30621	1N4148
6317▲	4822 130 30621	1N4148
6318▲	4822 130 30621	1N4148
6319▲	4822 130 30621	1N4148
6320▲	4822 130 30621	1N4148
6322▲	4822 130 30621	1N4148
6323▲	4822 130 30621	1N4148
6334▲	4822 130 30621	1N4148
6359▲	4822 130 30621	1N4148
6362▲	4822 130 30621	1N4148
6363▲	4822 130 30621	1N4148
6365▲	4822 130 30621	1N4148
6390▲	4822 130 30621	1N4148
6391	4822 130 34145	BZX79-C39
6393▲	4822 130 30821	1N4148
6394▲	4822 130 30621	1N4148

7306	4822 130 42513	BC858C
7307	4822 130 42513	BC858C
7308▲	5322 130 41982	BC848B
7315	4822 209 90038	TDA9155/N6A
7320▲	5322 130 41982	BC848B
7335▲	4822 209 83163	LM833N
7342▲	5322 130 41982	BC848B
7360	5322 209 61487	LM358N
7390	4822 130 42513	BC858C
7391	5322 130 42136	BC848C
7392	4822 130 42513	BC858C

Picture tube panel [R]

Various

	4822 265 31243	5P male v 2.5
▲	4822 265 40596	2P male
	4822 265 31242	2P male v 2.5
	4822 265 41451	9P male v 1.25
	4822 492 70788	Spring fix IC
	4822 255 70305	Socket for CRT
	4822 404 31199	Bracket
1030	4822 212 31829	Picture tube panel 29" SF
1030	4822 212 31833	Picyure tube panel 25" - 33"

2223▲	5322 122 34123	1nF 10% 50V
2230	5322 122 32661	56pF 5% 50V
2231	5322 122 32967	5.6pF 10% 63V
2232▲	5322 126 10223	4.7nF 10% 63V
2233▲	5322 122 34123	1nF 10% 50V
2236▲	4822 122 33342	33nF 10% 63V
2237	4822 121 42068	33nF 10% 400V
2240	5322 122 32661	56pF 5% 50V
2241	5322 122 32967	5.6pF 10% 63V
2242▲	5322 126 10223	4.7nF 10% 63V
2243▲	5322 122 34123	1nF 10% 50V
2246▲	4822 122 33342	33nF 10% 63V
2247	4822 121 42068	33nF 10% 400V
2250	5322 122 32661	56pF 5% 50V
2251	5322 122 32967	5.6pF 10% 63V
2252▲	5322 126 10223	4.7nF 10% 63V
2253▲	5322 122 34123	1nF 10% 50V
2256▲	4822 122 33342	33nF 10% 63V
2257	4822 121 42068	33nF 10% 400V
2260	5322 122 31946	27pF 5% 63V
2270	4822 124 23494	10uF 20% 250V
2272	4822 124 41643	100uF 20% 16V
2281	4822 122 31175	1nF 10% 500V
2285	4822 122 31175	1nF 10% 500V
2293▲	4822 122 33177	10nF 20% 50V
2297	4822 121 70581	1.5nF 5% 2KV

3222	4822 116 83864	10k 5% 0.5W
3223	4822 051 20103	10k 5% 0.1W
3224	4822 051 20271	270Ω 5% 0.1W
3225	4822 051 20182	1k8 5% 0.1W
3230	4822 051 20242	2k4 5% 0.1W
3231	4822 050 21204	120k 1% 0.6W
3233▲	4822 051 20008	0Ω 5% 0.1W
3234	4822 116 52175	100Ω 5% 0.5W
3235	4822 111 30991	680Ω 10%
3239	4822 050 11002	1k 1% 0.4W
3240	4822 051 20242	2k4 5% 0.1W
3241	4822 050 21204	120k 1% 0.6W
3242	4822 051 20622	6k2 5% 0.1W
3243▲	4822 051 20008	0Ω 5% 0.1W
3244	4822 116 52175	100Ω 5% 0.5W
3245	4822 111 30991	680Ω 10%
3249	4822 050 11002	1k 1% 0.4W
3250	4822 051 20242	2k4 5% 0.1W
3251	4822 050 21204	120k 1% 0.6W
3252	4822 051 20222	2k2 5% 0.1W
3253▲	4822 051 20008	0Ω 5% 0.1W
3254	4822 116 52175	100Ω 5% 0.5W
3255	4822 111 30991	680Ω 10%
3258	4822 051 20822	8k2 5% 0.1W
3259	4822 050 11002	1k 1% 0.4W
3260	4822 050 11002	1k 1% 0.4W
3261	4822 051 20823	82k 5% 0.1W
3263	4822 051 20333	33k 5% 0.1W
3272▲	4822 052 10068	8Ω8 5% 0.33W
3273▲	4822 052 10109	10Ω 5% 0.33W
3280	4822 052 11398	3Ω9 5% 0.5W
3280▲	4822 052 11108	1Ω 5% 0.5W
3281▲	4822 052 10151	150Ω 5% 0.33W
3282	4822 116 52182	15Ω 5% 0.5W
3283	4822 116 21231	VDR 1mA 50V MAX 115V
3285	4822 116 21231	VDR 1mA 50V MAX 115V
3287	4822 052 11398	3Ω9 5% 0.5W
3287▲	4822 052 11108	1Ω 5% 0.5W
3292	4822 116 52255	200k 5% 0.5W
3293	4822 116 52238	12k 5% 0.5W
3296	4822 116 52175	100Ω 5% 0.5W
3297	4822 050 21502	1k5 1% 0.6W
3999	4822 051 20222	2k2 5% 0.1W
3999	4822 051 20332	3k3 5% 0.1W
4xxx	4822 051 20008	0Ω 5% 0.1W

5272	4822 157 51216	5.6uH 10%
5273	4822 157 51216	5.6uH 10%
5280	4822 157 71461	22uH 10%
5281	4822 157 71461	22uH 10%

6225	4822 130 32831	BZX79-F3V0
6235	4822 130 30842	BAV21
6245	4822 130 30842	BAV21
6255	4822 130 30842	BAV21

7224	5322 130 42136	BC848C ▲
7230	4822 209 33365	TDA6111Q/N3
7240	4822 209 33365	TDA6111Q/N3
7250	4822 209 33365	TDA6111Q/N3

Audio power amplifier [A]

Various

	4822 265 31246	6P male v 2.5
	4822 265 31247	3P male v 1.25
	4822 265 31242	2P male v 2.5
	4822 265 41462	7P male v 1.25
	4822 290 61229	Socket for ext. loudsp.
	4822 277 30967	Switch loudsp. ON/OFF
	5322 390 20011	Vet silic.P4 20GR
	4822 492 62076	spring fix trans.
1050	4822 212 31831	Audio amplifier standard
1050	4822 212 31832	Audio amplifier Dolby

2500	4822 124 41579	10uF 20% 50V
2501	4822 122 32614	1.2nF 10% 50V
2502	4822 124 41579	10uF 20% 50V
2503	4822 122 32614	1.2nF 10% 50V
2504	4822 124 81082	3.3uF 20% 50V
2504	4822 121 51256	39nF 10% 50V
2505	4822 122 32808	1.2nF 10% 63V
2506	4822 124 41579	10uF 20% 50V
2507	4822 122 32614	1.2nF 10% 50V
2512	4822 126 13346	39nF 10% 50V
2515	5322 122 32658	22pF 5% 50V
2516	5322 122 32658	22pF 5% 50V
2518	4822 126 10002	100nF 20% 25V
2519	4822 126 10002	100nF 20% 25V
2520	4822 121 51252	470nF 5% 63V
2522	4822 126 13477	82nF 10% 25V
2524▲	4822 122 33342	33nF 10% 63V
2525	4822 126 13371	56nF 10% 50V
2528	4822 122 33175	2.2nF 20% 50V
2531	4822 122 33128	15nF 10% 63V
2533	4822 122 33128	15nF 10% 63V
2535	4822 121 42408	220nF 5% 63V
2536	4822 126 10002	100nF 20% 25V
2537	4822 126 10002	100nF 20% 25V
2544	4822 126 12944	47nF 10% 50V
2545	4822 122 32927	220nF 20% 50V
2546	4822 126 12944	47nF 10% 50V
2547	4822 122 32927	220nF 20% 50V
2548	4822 126 12784	22nF 20% 100V
2554	4822 126 12944	47nF 10% 50V
2555	4822 122 32927	220nF 20% 50V
2556	4822 126 12944	47nF 10% 50V
2557	4822 122 32927	220nF 20% 50V
2558	4822 126 12784	22nF 20% 100V
2559	4822 126 12784	22nF 20% 100V
2560	4822 126 12784	22nF 20% 100V
2561	4822 124 41584	100uF 20% 10V
2562	4822 124 41579	10uF 20% 50V
2563	5322 124 41431	22uF 20% 35V
2564	4822 126 10002	100nF 20% 25V
2565	4822 126 10002	100nF 20% 25V
2566	4822 124 41334	470uF 20% 35V
2567	4822 124 41334	470uF 20% 35V
2568	4822 124 41579	10uF 20% 50V
2569	4822 124 41579	10uF 20% 50V
2574	4822 126 12944	47nF 10% 50V
2576	4822 126 12944	47nF 10% 50V
2584	4822 126 12944	47nF 10% 50V
2586	4822 126 12944	47nF 10% 50V

3500	4822 051 10392	3k9 2% 0.25W
3501▲	4822 051 20472	4k7 5% 0.1W
3502	4822 051 20472	4k7 5% 0.1W
3503▲	4822 051 20472	4k7 5% 0.1W
3504	4822 051 20392	3k9 5% 0.1W
3505▲	4822 051 20472	4k7 5% 0.1W
3506	4822 051 20392	3k9 5% 0.1W
3507▲	4822 051 20472	4k7 5% 0.1W
3510	4822 051 20393	39k 5% 0.1W
3511	4822 051 20393	39k 5% 0.1W
3512	4822 051 20183	18k 5% 0.1W
3515	4822 051 20104	100k 5% 0.1W
3516	4822 051 20104	100k 5% 0.1W
3517	4822 051 20104	100k 5% 0.1W
3518	4822 051 20104	100k 5% 0.1W
3519	4822 116 52257	22k 5% 0.5W
3520	4822 051 20223	22k 5% 0.1W
3521	4822 051 20153	15k 5% 0.1W
3522	4822 051 20182	1k8 5% 0.1W
3524▲	4822 051 20109	10Ω 5% 0.1W
3525	4822 051 20224	220k 5% 0.1W
3527	4822 051 20104	100k 5% 0.1W
3528	4822 051 20104	100k 5% 0.1W
3530	4822 051 20104	100k 5% 0.1W
3531	4822 051 20104	100k 5% 0.1W
3532	4822 051 20104	100k 5% 0.1W
3533	4822 051 20182	1k8 5% 0.1W
3534	4822 051 20104	100k 5% 0.1W
3535	4822 051 20104	100k 5% 0.1W
3536	4822 051 20103	10k 5% 0.1W
3541	4822 051 20473	47k 5% 0.1W
3542	4822 116 52298	6k8 5% 0.5W
3543	4822 116 52234	100k 5% 0.5W
3544▲	4822 052 10828	8Ω2 5% 0.33W
3545	4822 116 52234	100k 5% 0.5W
3546▲	4822 052 10828	8Ω2 5% 0.33W
3547	4822 116 52234	100k 5% 0.5W
3548	4822 051 20103	10k 5% 0.1W

3586▲	4822 051 20472	4k7 5% 0,1W	
3589	4822 051 20223	22k 5% 0,1W	
3590	4822 051 20224	220k 5% 0,1W	
3592	4822 051 20223	22k 5% 0,1W	
3593	4822 051 20182	1k8 5% 0,1W	
3594	4822 051 20153	15k 5% 0,1W	
3595	4822 051 20222	2k2 5% 0,1W	
3596	4822 051 20392	3k9 5% 0,1W	
3597▲	4822 051 20109	10Ω 5% 0,1W	
3598	4822 051 20332	3k3 5% 0,1W	
3599	4822 051 20332	3k3 5% 0,1W	
3999	4822 051 20479	47Ω 5% 0,1W	
4xxx	4822 051 20008	0Ω 5% 0,1W	

6575▲	4822 130 30821	1N4148	
6576▲	4822 130 30821	1N4148	
6580▲	4822 130 30821	1N4148	
6581▲	4822 130 30621	1N4148	

7572	4822 209 30095	LM833D	
7574	4822 051 10008	0Ω 5% 0,25W	
7587	4822 209 30095	LM833D	
7588	5322 209 14481	HEF4053BT	
7589▲	5322 130 41982	BC848B	

Source selection panel [I] [11] [12]

Various

	4822 265 51385	25P male v 1,25
	4822 265 41451	9P male v 1,25
	4822 267 60399	Socket SCART blue
	4822 267 60398	Socket SCART black
	4822 267 31877	Socket 2 x cinch
1032	4822 212 31858	Source selection panel ECO
1805	4822 242 72527	Crystal 4,00 MHz

2800	4822 124 81092	47µF 20% 25V	
2801	4822 122 32927	220nF 20% 50V	
2802	4822 124 81093	10µF 20% 25V	
2804	4822 124 81093	10µF 20% 25V	
2805	4822 124 81093	10µF 20% 25V	
2806	4822 124 81093	10µF 20% 25V	
2808	4822 124 81093	10µF 20% 25V	
2810	4822 124 81093	10µF 20% 25V	
2811	4822 124 81093	10µF 20% 25V	
2812	4822 124 81093	10µF 20% 25V	
2813	4822 124 81093	10µF 20% 25V	
2814	4822 124 81093	10µF 20% 25V	
2816	4822 122 32927	220nF 20% 50V	
2817	4822 124 81092	47µF 20% 25V	
2818	4822 122 32927	220nF 20% 50V	
2819	4822 124 81093	10µF 20% 25V	
2820	4822 122 32927	220nF 20% 50V	
2821	4822 122 32927	220nF 20% 50V	
2823	4822 122 32927	220nF 20% 50V	
2825	4822 122 32927	220nF 20% 50V	
2827	4822 122 32927	220nF 20% 50V	
2828	4822 122 32927	220nF 20% 50V	
2829	4822 122 32927	220nF 20% 50V	
2830	4822 124 81093	10µF 20% 25V	
2832	4822 124 81092	47µF 20% 25V	
2833▲	5322 122 34123	1nF 10% 50V	
2835	5322 122 32531	100pF 5% 50V	
2836	5322 122 31863	330pF 5% 50V	
2837	5322 122 31863	330pF 5% 50V	
2838	5322 122 31863	330pF 5% 50V	
2839	4822 122 32927	220nF 20% 50V	
2840	4822 122 32927	220nF 20% 50V	
2842	4822 124 81093	10µF 20% 25V	
2843	5322 122 31863	330pF 5% 50V	
2845	4822 122 32927	220nF 20% 50V	
2846	4822 124 81093	10µF 20% 25V	
2847	4822 124 81093	10µF 20% 25V	
2848	5322 122 31842	330pF 2% 63V	
2853	5322 122 31863	330pF 5% 50V	
2854	5322 122 31863	330pF 5% 50V	
2855	5322 122 31863	330pF 5% 50V	
2856	5322 122 31842	330pF 2% 63V	
2857	4822 122 32927	220nF 20% 50V	
2858	5322 122 31863	330pF 5% 50V	
2860	5322 122 31863	330pF 5% 50V	
2861	5322 122 31863	330pF 5% 50V	
2864	5322 122 31863	330pF 5% 50V	
2865	5322 122 31863	330pF 5% 50V	
2866	5322 122 31863	330pF 5% 50V	
2868	5322 122 31863	330pF 5% 50V	
2869	4822 122 32927	220nF 20% 50V	
2870	4822 122 32927	220nF 20% 50V	
2871	4822 122 32927	220nF 20% 50V	
2872	4822 122 32927	220nF 20% 50V	
2873	4822 122 32927	220nF 20% 50V	
2874	4822 122 32927	220nF 20% 50V	
2885	4822 122 32927	220nF 20% 50V	
2886	4822 122 32927	220nF 20% 50V	
2887	4822 122 32927	220nF 20% 50V	
2888	4822 122 32139	12pF 2% 63V	
2890	4822 122 32927	220nF 20% 50V	
2891	4822 124 81093	10µF 20% 25V	
2892	4822 124 81093	10µF 20% 25V	
2893	4822 124 81092	47µF 20% 25V	
2894	4822 126 13473	220nF 20% 50V	
2895	4822 126 13473	220nF 20% 50V	
2896	4822 126 10326	180pF 5% 63V	
2897	4822 126 10326	180pF 5% 63V	
2899▲	5322 122 34123	1nF 10% 50V	

3800▲	4822 052 10478	4Ω7 5% 0,33W	
3801	4822 051 20221	220Ω 5% 0,1W	
3802	4822 051 20103	10k 5% 0,1W	
3803	4822 051 20103	10k 5% 0,1W	
3805	4822 051 20473	47k 5% 0,1W	
3806	4822 051 20104	100k 5% 0,1W	
3807	4822 051 20473	47k 5% 0,1W	
3808	4822 051 20151	150Ω 5% 0,1W	
3809	4822 051 20151	150Ω 5% 0,1W	
3810	4822 051 20432	4k3 5% 0,1W	
3811	4822 051 20242	2k4 5% 0,1W	
3812	4822 051 20681	680Ω 5% 0,1W	
3813	4822 051 20681	680Ω 5% 0,1W	
3818	4822 051 20103	10k 5% 0,1W	
3819	4822 051 20103	10k 5% 0,1W	
3820	4822 051 20103	10k 5% 0,1W	
3821	4822 051 20103	10k 5% 0,1W	
3822	4822 051 20362	3k6 5% 0,1W	
3823	4822 051 20273	27k 5% 0,1W	
3825	4822 051 20473	47k 5% 0,1W	
3827	4822 051 20222	2k2 5% 0,1W	
3828	4822 051 20561	560Ω 5% 0,1W	
3829	4822 051 20222	2k2 5% 0,1W	
3830	4822 051 20222	2k2 5% 0,1W	
3831	4822 051 20561	560Ω 5% 0,1W	
3832	4822 051 20222	2k2 5% 0,1W	
3833	4822 051 20222	2k2 5% 0,1W	
3834	4822 051 20561	560Ω 5% 0,1W	
3835	4822 051 20222	2k2 5% 0,1W	
3836	4822 051 20101	100Ω 5% 0,1W	
3837	4822 051 20561	560Ω 5% 0,1W	
3838	4822 051 20103	10k 5% 0,1W	
3842	4822 051 20331	330Ω 5% 0,1W	
3843	4822 051 20331	330Ω 5% 0,1W	
3844	4822 051 20222	2k2 5% 0,1W	
3845	4822 051 20331	330Ω 5% 0,1W	
3846	4822 051 20331	330Ω 5% 0,1W	
3847	4822 051 10369	36Ω 2% 0,25W	
3848▲	4822 051 20472	4k7 5% 0,1W	
3849	4822 051 10102	1k 2% 0,25W	
3850	4822 051 20474	470k 5% 0,1W	
3852	4822 051 20153	15k 5% 0,1W	
3853	4822 051 20103	10k 5% 0,1W	
3854	4822 051 20153	15k 5% 0,1W	
3855	4822 051 20103	10k 5% 0,1W	
3856	4822 051 20153	15k 5% 0,1W	
3857	4822 051 20103	10k 5% 0,1W	
3866	4822 051 20101	100Ω 5% 0,1W	
3867	4822 051 20101	100Ω 5% 0,1W	
3868	4822 051 20101	100Ω 5% 0,1W	
3871	4822 051 20101	100Ω 5% 0,1W	
3872	4822 051 20101	100Ω 5% 0,1W	
3875	4822 051 20101	100Ω 5% 0,1W	
3876▲	4822 116 83953	75Ω 5% 0,125W	
3877	4822 051 20151	150Ω 5% 0,1W	
3878	4822 051 20151	150Ω 5% 0,1W	
3879	4822 051 20151	150Ω 5% 0,1W	
3880	4822 051 20331	330Ω 5% 0,1W	
3881	4822 051 10102	1k 2% 0,25W	
3882	4822 051 20471	470Ω 5% 0,1W	
3883	4822 051 20471	470Ω 5% 0,1W	
3884▲	4822 116 83953	75Ω 5% 0,125W	
3885	4822 051 20103	10k 5% 0,1W	
3886	4822 051 10102	1k 2% 0,25W	
3887	4822 051 20331	330Ω 5% 0,1W	
3888▲	4822 116 83953	75Ω 5% 0,125W	
3889▲	4822 116 83953	75Ω 5% 0,125W	
3890▲	4822 116 83953	75Ω 5% 0,125W	
3891	4822 051 10151	150Ω 2% 0,25W	

3892▲	4822 116 83953	75Ω 5% 0,125W	
3893	4822 051 20151	150Ω 5% 0,1W	
3894	4822 051 20224	220k 5% 0,1W	
3895	4822 051 20224	220k 5% 0,1W	
3896▲	4822 052 10478	4Ω7 5% 0,33W	
3897	4822 051 10102	1k 2% 0,25W	
3898	4822 051 20471	470Ω 5% 0,1W	
3899	4822 051 20103	10k 5% 0,1W	
3900	4822 051 20471	470Ω 5% 0,1W	
3901▲	4822 116 83953	75Ω 5% 0,125W	
3902	4822 051 10102	1k 2% 0,25W	
3903	4822 051 20224	220k 5% 0,1W	
3904▲	4822 116 83953	75Ω 5% 0,125W	
3905▲	4822 116 83953	75Ω 5% 0,125W	
3906▲	4822 116 83953	75Ω 5% 0,125W	
3907▲	4822 116 83953	75Ω 5% 0,125W	
3909	4822 051 20151	150Ω 5% 0,1W	
3910	4822 051 10102	1k 2% 0,25W	
3915	4822 051 10102	1k 2% 0,25W	
3917▲	4822 116 83953	75Ω 5% 0,125W	
3921	4822 051 20471	470Ω 5% 0,1W	
3922	4822 051 20224	220k 5% 0,1W	
3924	4822 051 20332	3k3 5% 0,1W	
3926▲	4822 052 10478	4Ω7 5% 0,33W	
3927▲	4822 052 10478	4Ω7 5% 0,33W	
3928▲	4822 052 10478	4Ω7 5% 0,33W	
3929▲	4822 052 10478	4Ω7 5% 0,33W	
3931▲	4822 052 10478	4Ω7 5% 0,33W	
3932	4822 051 20331	330Ω 5% 0,1W	
3934	4822 051 20331	330Ω 5% 0,1W	
3935▲	4822 052 10478	4Ω7 5% 0,33W	
3938	4822 051 20223	22k 5% 0,1W	
3939	4822 051 20223	22k 5% 0,1W	
3941	4822 051 20223	22k 5% 0,1W	
3942	4822 051 20223	22k 5% 0,1W	
3943	4822 051 20223	22k 5% 0,1W	
3944	4822 051 20223	22k 5% 0,1W	
3945	4822 051 20151	150Ω 5% 0,1W	
3946	4822 051 20151	150Ω 5% 0,1W	
3954	4822 051 10102	1k 2% 0,25W	
3961	4822 051 10102	1k 2% 0,25W	
3962	4822 051 10102	1k 2% 0,25W	
3965	4822 051 20103	10k 5% 0,1W	
3966	4822 051 20103	10k 5% 0,1W	
3967	4822 051 20103	10k 5% 0,1W	
3968	4822 051 20103	10k 5% 0,1W	
3970	4822 051 10331	330Ω 2% 0,25W	
3971	4822 051 20122	1k2 5% 0,1W	
3972	4822 117 11139	1k5 1% 0,1W	
3973	4822 051 20474	470k 5% 0,1W	
3977	4822 051 20103	10k 5% 0,1W	
3980	4822 051 20473	47k 5% 0,1W	
3981	4822 051 20473	47k 5% 0,1W	
3982	4822 051 20182	1k8 5% 0,1W	
3983	4822 051 20332	3k3 5% 0,1W	
3984	4822 051 20222	2k2 5% 0,1W	
3992	4822 051 10102	1k 2% 0,25W	
3993	4822 051 20151	150Ω 5% 0,1W	
3994	4822 051 10102	1k 2% 0,25W	
3995	4822 051 20103	10k 5% 0,1W	
3996	4822 051 20471	470Ω 5% 0,1W	
3997	4822 051 20471	470Ω 5% 0,1W	
3999	4822 051 20279	27Ω 5% 0,1W	
4xxx	4822 051 20002	0Ω 5% 0,1W	
5801	4822 157 51216	5,6uH 10%	

6800	4822 130 81513	LLZ-C6V8	
6802	4822 130 81513	LLZ-C6V8	
6808	4822 130 81513	LLZ-C6V8	
6809	4822 130 81513	LLZ-C6V8	
6810	4822 130 81513	LLZ-C6V8	
6811	4822 130 81513	LLZ-C6V8	
6812	4822 130 81513	LLZ-C6V8	
6813	4822 130 81513	LLZ-C6V8	
6814	4822 130 81513	LLZ-C6V8	
6815	4822 130 81513	LLZ-C6V8	
6816	4822 130 81513	LLZ-C6V8	
6817	4822 130 81513	LLZ-C6V8	
6818	4822 130 81513	LLZ-C6V8	
6819	4822 130 81513	LLZ-C6V8	
6821	4822 130 82346	LLZ-C27	
6823	4822 130 82346	LLZ-C27	
6826	4822 130 82346	LLZ-C27	
6827	4822 130 82346	LLZ-C27	
6830	4822 130 82346	LLZ-C27	
6831	4822 130 82346	LLZ-C27	
6832	4822 130 82346	LLZ-C27	
6833	4822 130 82346	LLZ-C27	

6834	4822 130 82346	LLZ-C27	
6835	4822 130 82346	LLZ-C27	
6836	4822 130 82346	LLZ-C27	
6837	4822 130 82346	LLZ-C27	
6838	4822 130 82346	LLZ-C27	
6839	4822 130 82346	LLZ-C27	
6840	4822 130 82346	LLZ-C27	
6841	4822 130 82346	LLZ-C27	
6842	4822 130 82346	LLZ-C27	
6843	4822 130 82346	LLZ-C27	
6844	4822 130 82346	LLZ-C27	
6845	4822 130 82346	LLZ-C27	
6846	4822 130 82346	LLZ-C27	
6847	4822 130 82346	LLZ-C27	
6848	4822 130 82346	LLZ-C27	
6849	4822 130 82346	LLZ-C27	
6851	4822 130 80446	LL4148	

7800▲	5322 130 41982	BC848B	
7801	5322 130 42136	BC848C	
7803▲	5322 130 41982	BC848B	
7804▲	5322 130 41982	BC848B	
7805▲	5322 130 41982	BC848B	
7806▲	5322 130 41982	BC848B	
7808▲	5322 130 41982	BC848B	
7811▲	5322 130 41982	BC848B	
7812▲	5322 130 41982	BC848B	
7814	4822 209 90046	TMD47C203N	
7815	4822 209 90051	TDA8601/C1	
7817	4822 209 80631	LM339N	
7819▲	4822 130 44197	BC558B	
7820▲	5322 130 41982	BC848B	
7822	4822 209 90048	TEA6430	
7823	4822 209 33314	TEA6417	
7830	5322 130 41983	BC858B	
7831▲	5322 130 41982	BC848B	

Feature-box [F]

Various

	4822 267 51433	10P female BTB
	4822 255 41356	IC socket
1345	4822 212 31803	Feature box 3
1485	4822 242 72572	Crystal 12 MHz

2375	5322 122 32531	100pF 5% 50V	
2376	4822 122 33496	100nF 10% 63V	
2377	5322 122 32965	18pF 5% 50V	
2378	5322 122 32661	56pF 5% 50V	
2379	4822 122 33515	82pF 5% 63V	
2380	4822 122 32542	47nF 10% 63V	
2385	5322 122 32531	100pF 5% 50V	
2386	4822 126 10002	100nF 20% 25V	
2387	5322 122 32661	56pF 5% 50V	
2388	5322 126 10343	1,8pF 5% 63V	
2389	4822 126 10326	180pF 5% 63V	
2390▲	5322 122 32654	22nF 10% 63V	
2395	5322 122 32531	100pF 5% 50V	
2396	4822 126 10002	100nF 20% 25V	
2397	5322 122 32661	56pF 5% 50V	
2398	5322 126 10343	1,8pF 5% 63V	
2399	4822 126 10326	180pF 5% 63V	
2400▲	5322 122 32654	22nF 10% 63V	
2410	4822 124 41715	220uF 20% 6,3V	
2411	4822 124 41715	220uF 20% 6,3V	
2412▲	5322 122 32654	22nF 10% 63V	
2413▲	5322 122 32654	22nF 10% 63V	
2415▲	5322 122 32654	22nF 10% 63V	
2419	4822 124 20678	47uF 50% 10V	
2420	4822 126 10002	100nF 20% 25V	
2421▲	5322 122 32654	22nF 10% 63V	
2422	4822 124 41643	100uF 20% 16V	
2423	4822 124 41643	100uF 20% 16V	
2424▲	5322 122 32654	22nF 10% 63V	
2425▲	5322 122 32654	22nF 10% 63V	
2426	4822 124 41715	220uF 20% 6,3V	
2430	5322 122 32531	100pF 5% 50V	
2435	5322 122 32531	100pF 5% 50V	
2440	4822 126 10002	100nF 20% 25V	
2441	4822 124 20678	47uF 50% 10V	
2445	4822 126 10002	100nF 20% 25V	
2446	4822 126 10002	100nF 20% 25V	
2447	4822 126 11725	1uF 205 5V	
2448	4822 124 20678	47uF 50% 10V	
2449▲	4822 124 40433	47uF 20% 25V	
2450▲	5322 122 32654	22nF 10% 63V	
2451▲	5322 122 32654	22nF 10% 63V	

2452▲	4822 124 40246	4,7µF 20% 63V	
2453	4822 126 10002	100nF 20% 25V	
2454	4822 124 20578	47uF 50% 10V	
2455	4822 124 41579	10µF 20% 50V	
2460▲	5322 122 32654	22nF 10% 63V	
2462▲	5322 122 32654	22nF 10% 63V	
2465	5322 122 32966	39pF 5% 50V	
2466	5322 122 32531	100pF 5% 50V	
2467	5322 122 32461	15pF 5% 50V	
2468	5322 122 32658	22pF 5% 50V	
2469	5322 122 33538	150pF 2% 63V	
2476	5322 122 32659	33pF 5% 50V	
2477	5322 122 32287	4,7pF 5% 50V	
2478	5322 122 33861	120pF 10% 50V	
2481	5322 122 32659	33pF 5% 50V	
2482	5322 122 32287	4,7pF 5% 50V	
2483	5322 122 33861	120pF 10% 50V	
2485	5322 122 32448	10pF 5% 50V	
2486	5322 122 32448	10pF 5% 50V	
2490	5322 122 32531	100pF 5% 50V	
2492	5322 122 32531	100pF 5% 50V	
2493	5322 122 32531	100pF 5% 50V	
2505	4822 126 10002	100nF 20% 25V	
2508	5322 122 32452	47pF 5% 63V	
2509	5322 122 32452	47pF 5% 63V	

3370	4822 051 20101	100Ω 5% 0,1W	
3371	4822 051 20101	100Ω 5% 0,1W	
3372	4822 051 20101	100Ω 5% 0,1W	
3375	4822 051 20332	3k3 5% 0,1W	
3376	4822 051 20473	47k 5% 0,1W	
3377	4822 051 10102	1k 2% 0,25W	
3378	4822 117 11597	510Ω 1% 0,1W	
3379	4822 117 11449	2k2 1% 0,1W	
3380	4822 051 20681	680Ω 5% 0,1W	
3385	4822 051 20332	3k3 5% 0,1W	
3386	4822 051 20473	47k 5% 0,1W	
3387	4822 117 11503	220Ω 1% 0,1W	
3388	4822 117 11597	510Ω 1% 0,1W	
3389	4822 117 10361	680Ω 1% 0,1W	
3390	4822 051 20681	680Ω 5% 0,1W	
3395	4822 051 20332	3k3 5% 0,1W	
3396	4822 051 20473	47k 5% 0,1W	
3397	4822 117 11595	270Ω 1% 0,1W	
3398	4822 117 10845	620Ω 1% 0,1W	
3399	4822 117 10361	680Ω 1% 0,1W	
3400	4822 051 20681	680Ω 5% 0,1W	
3410	4822 116 52176	10Ω 5% 0,5W	
3411	4822 117 11448	180Ω 1% 0,1W	
3413	4822 051 20301	300Ω 5% 0,1W	
3414	4822 051 20103	10k 5% 0,1W	
3422▲	4822 052 10279	27Ω 5% 0,33W	
3430	4822 051 10102	1k 2% 0,25W	
3431▲	4822 051 20472	4k7 5% 0,1W	
3432▲	4822 051 20472	4k7 5% 0,1W	
3433	4822 051 20332	3k3 5% 0,1W	
3434	4822 051 20101	100Ω 5% 0,1W	
3435	4822 051 20332	3k3 5% 0,1W	
3436	4822 051 20101	100Ω 5% 0,1W	
3450	4822 051 20101	100Ω 5% 0,1W	
3451	4822 051 20101	100Ω 5% 0,1W	
3452	4822 051 20101	100Ω 5% 0,1W	
3453	4822 051 20101	100Ω 5% 0,1W	
3460▲	4822 052 10229	22Ω 5% 0,33W	
3461	4822 051 20682	6k8 5% 0,1W	
3462	4822 051 20122	1k2 5% 0,1W	
3465	4822 117 11596	390Ω 1% 0,1W	
3466	4822 117 11373	100Ω 1% 0,1W	
3467	4822 051 20475	4Ω7 5% 0,5W	
3468	4822 051 20479	47Ω 5% 0,1W	
3469	4822 117 11594	200Ω 1% 0,1W	
3475	4822 117 11596	390Ω 1% 0,1W	
3476	4822 117 11503	220Ω 1% 0,1W	
3477	4822 051 20203	20k 5% 0,1W	
3480	4822 117 11596	390Ω 1% 0,1W	
3481	4822 117 11504	270Ω 1% 0,1W	
3482	4822 117 11154	1k 1% 0,1W	
3485	4822 051 20104	100k 5% 0,1W	
3490▲	4822 051 20472	4k7 5% 0,1W	
3491	4822 051 20103	10k 5% 0,1W	
3492▲	4822 051 20472	4k7 5% 0,1W	
3493	4822 051 20103	10k 5% 0,1W	
3494	4822 051 20471	470Ω 5% 0,1W	
3495	4822 051 20475	4Ω7 5% 0,1W	
3500	4822 051 20561	560Ω 5% 0,1W	
3502▲	4822 051 20472	4k7 5% 0,1W	
3503	4822 051 20221	220Ω 5% 0,1W	
3504	4822 051 20273	27k 5% 0,1W	
3505	4822 051 20222	2k2 5% 0,1W	
3506	4822 051 20103	10k 5% 0,1W	
3507	4822 051 20272	2k7 5% 0,1W	
3508	4822 051 20101	100Ω 5% 0,1W	
3509	4822 051 20101	100Ω 5% 0,1W	

3510	4822 051 10102	1k 2% 0,25W	
3511	4822 051 10102	1k 2% 0,25W	
3512	4822 051 20101	100Ω 5% 0,1W	
3513	4822 051 20101	100Ω 5% 0,1W	
3514	4822 051 20101	100Ω 5% 0,1W	
3515▲	4822 051 20008	0Ω 5% 0,1W	
3999	4822 051 10102	1k 2% 0,25W	
4xxx	4822 051 20008	0Ω 5% 0,1W	

5377	4822 157 53303	12uH 10%	
5378	4822 153 20251	18uH 10%	
5388	4822 157 63316	56uH 10%	
5398	4822 157 63316	56uH 10%	
5420	4822 157 51216	5,6uH 10%	
5421	4822 157 51216	5,6uH 10%	
5425	4822 157 60147	2,2uH	
5440	4822 157 51216	5,6uH 10%	
5445	4822 157 51216	5,6uH 10%	
5446	4822 157 51216	5,6uH 10%	
5447	4822 157 51216	5,6uH 10%	
5453	4822 157 51216	5,6uH 10%	
5454	4822 157 51216	5,6uH 10%	
5465	4822 157 xxxxx	1,5uH 20%	
5466	4822 157 71443	1,8uH 20%	
5477	4822 157 60122	4,7uH 10%	
5482	4822 157 60122	4,7uH 10%	
5490	4822 157 60147	2,2uH	
5492	4822 157 60147	2,2uH	
5505	4822 157 51216	5,6uH 10%	

6500	4822 130 34382	BZX79-F8V2	

7376	5322 130 42136	BC848C	
7380	5322 130 42136	BC848C	
7386	5322 130 42136	BC848C	
7390	5322 130 42136	BC848C	
7396	5322 130 42136	BC848C	
7400	5322 130 42136	BC848C	
7432	4822 209 73852	PMBT2369	
7441	4822 209 90033	TDA8753	
7445	4822 209 90021	TMS4C2970	
7446	4822 209 90021	TMS4C2970	
7447	4822 209 90034	SAA4990H/V1	
7450	4822 209 33689	SAA4970/V2	
7460	4822 209 72042	MC78L05ACP	
7461	5322 130 42136	BC848C	
7490	4822 209 73852	PMBT2369	
7492	4822 209 73852	PMBT2369	
7493	4822 130 42513	BC858C	
7500	5322 130 42136	BC848C	
7504	4822 209 73852	PMBT2369	
7505	4822 209 90019	SOFTWARE FBX3 V1.0	
7506	4822 130 42513	BC858C	

PIP panel [P]

Various

	4822 265 41328	10P female BTB
	4822 267 41154	4P female BTB
	4822 265 31251	5P male v 1,25
1340	4822 212 31861	PIP panel 2" tuner
1750	4822 242 81575	Crystal 3.579 500 MHz
1765	4822 242 81691	crystal 4.433 619 MHz
1775	4822 210 10635	UV1216
1788	4822 242 81966	Crystal 21.05915 MHz
1920	4822 242 80295	Crystal OFWG3962M

2755▲	5322 122 32654	22nF 10% 63V	
2756	4822 124 41576	2,2uF 20% 50V	
2758	4822 124 41643	100uF 20% 16V	
2759	4822 126 13473	220nF 20% 50V	
2760	4822 126 13482	470nF 20% 16V	
2761▲	4822 124 40433	47uF 20% 25V	
2762	4822 126 10002	100nF 20% 25V	
2766	4822 124 41643	100uF 20% 16V	
2767	4822 124 40756	1uF 20% 100V	
2768	4822 124 41643	100uF 20% 16V	
2770	4822 124 40756	1uF 20% 100V	

2772	4822 124 40756	1µF 20% 100V	
2778	4822 126 10002	100nF 20% 25V	
2780	4822 126 10002	100nF 20% 25V	
2781	4822 126 13473	220nF 20% 50V	
2782	4822 126 13473	220nF 20% 50V	
2784	4822 126 13473	220nF 20% 50V	
2786	4822 126 10002	100nF 20% 25V	
2787	5322 122 31948	27pF 5% 63V	
2788	4822 126 10002	100nF 20% 25V	
2789	5322 122 31946	27pF 5% 63V	
2790▲	5322 122 32654	22nF 10% 63V	
2792	4822 126 10002	100nF 20% 25V	
2794	4822 126 12944	47nF 10% 50V	
2796	4822 126 12944	47nF 10% 50V	
2798	4822 126 10002	100nF 20% 25V	
2800	4822 122 33219	1,8nF 10% 50V	
2802	5322 122 32531	100pF 5% 50V	
2810	4822 126 13473	220nF 20% 50V	
2812	4822 126 10002	100nF 20% 25V	
2816	4822 126 10002	100nF 20% 25V	
2821	5322 122 32287	4,7pF 5% 50V	
2822	4822 126 12944	47nF 10% 50V	
2823	5322 122 32287	4,7pF 5% 50V	
2824	4822 126 12944	47nF 10% 50V	
2825	5322 122 32287	4,7pF 5% 50V	
2826	4822 126 12944	47nF 10% 50V	
2828	4822 126 12944	47nF 10% 50V	
2830	4822 126 12944	47nF 10% 50V	
2832	4822 126 12944	47nF 10% 50V	
2844▲	5322 122 32654	22nF 10

2558	5322 122 31863	330pF 5% 50V	
2559	5322 122 33538	150pF 2% 63V	
2560	5322 122 33538	150pF 2% 63V	
2570	4822 126 10002	100nF 20% 25V	
2572	4822 122 33514	68pF 5% 50V	
2573	5322 122 31863	330pF 5% 50V	
2574	4822 126 10002	100nF 20% 25V	
2575	4822 126 13081	220nF 20% 25V	
2576	4822 126 10002	100nF 20% 25V	
2578	4822 126 10002	100nF 20% 25V	
2581▲	4822 124 40433	47uF 20% 25V	
2582	4822 122 33514	68pF 5% 50V	
2583	5322 122 31863	330pF 5% 50V	
2585	4822 126 13482	470nF 20% 16V	
2586	4822 126 13482	470nF 20% 16V	
2588	5322 122 32452	47pF 5% 63V	
2589	5322 122 32452	47pF 5% 63V	
2590	4822 122 33891	3,3nF 10% 63V	
2591	4822 122 33216	270pF 5% 50V	
2594	4822 122 33216	270pF 5% 50V	
2596▲	4822 124 40433	47uF 20% 25V	
2610	4822 122 33891	3,3nF 10% 63V	
2611	4822 122 33216	270pF 5% 50V	
2614	4822 126 13452	270pF 10% 63V	
2616▲	4822 124 40433	47uF 20% 25V	
2621▲	4822 124 40433	47uF 20% 25V	

3382	4822 051 20243	24k 5% 0,1W	
3383	4822 051 20333	33k 5% 0,1W	
3524▲	4822 051 20109	10Ω 5% 0,1W	
3525	4822 051 20182	1k8 5% 0,1W	
3526	4822 051 20392	3k9 5% 0,1W	
3527	4822 051 20392	3k9 5% 0,1W	
3528	4822 051 10102	1k 2% 0,25W	
3529	4822 051 20569	56Ω 5% 0,1W	
3530	4822 051 20222	2k2 5% 0,1W	
3531	4822 051 20431	430Ω 5% 0,1W	
3532	4822 051 20241	240Ω 5% 0,1W	
3540	4822 051 20223	22k 5% 0,1W	
3541	4822 051 20273	27k 5% 0,1W	
3542	4822 051 20104	100k 5% 0,1W	
3543	4822 051 20104	100k 5% 0,1W	
3544	4822 051 20103	10k 5% 0,1W	
3545	4822 051 20105	1M 5% 0,1W	
3546	4822 051 10102	1k 2% 0,25W	
3550	4822 051 20332	3k3 5% 0,1W	
3551	4822 051 20332	3k3 5% 0,1W	
3552	4822 051 20104	100k 5% 0,1W	
3553	4822 051 20159	15Ω 5% 0,1W	
3554	4822 051 20823	82k 5% 0,1W	
3555	4822 051 20223	22k 5% 0,1W	
3556	4822 051 20223	22k 5% 0,1W	
3557	4822 051 20392	3k9 5% 0,1W	
3560▲	4822 052 10109	10Ω 5% 0,33W	
3561▲	4822 052 10278	2Ω7 5% 0,33W	
3562	4822 051 20563	56k 5% 0,1W	
3563	4822 051 20224	220k 5% 0,1W	
3564	4822 051 20101	100Ω 5% 0,1W	
3565	4822 051 20101	100Ω 5% 0,1W	
3566▲	4822 052 10478	4Ω7 5% 0,33W	
3567	4822 051 20563	56k 5% 0,1W	
3570	4822 050 11002	1k 1% 0,4W	
3571	4822 051 20103	10k 5% 0,1W	
3572	4822 051 20103	10k 5% 0,1W	
3572▲	4822 051 20472	4k7 5% 0,1W	
3573	4822 051 20103	10k 5% 0,1W	
3575	4822 051 20104	100k 5% 0,1W	
3582	4822 051 20103	10k 5% 0,1W	
3582	4822 051 20222	2k2 5% 0,1W	
3583	4822 051 20333	33k 5% 0,1W	
3583	4822 051 20683	68k 5% 0,1W	
3584	4822 051 20103	10k 5% 0,1W	
3584	4822 051 20243	24k 5% 0,1W	
3585	4822 051 20333	33k 5% 0,1W	
3590	4822 051 10102	1k 2% 0,25W	
3591	4822 051 20103	10k 5% 0,1W	
3592	4822 051 20103	10k 5% 0,1W	
3592▲	4822 051 20472	4k7 5% 0,1W	
3593	4822 051 20103	10k 5% 0,1W	
3598	4822 051 20104	100k 5% 0,1W	
3599	4822 051 10279	27Ω 2% 0,25W	
3599	4822 051 10539	33Ω 2% 0,25W	
3599	4822 051 10479	47Ω 2% 0,25W	
4xxx	4822 051 20008	0Ω 5% 0,1W	

5525	4822 157 53473	1µH 10%	
5526	4822 157 53473	1µH 10%	
5530	4822 158 11137	Filter LC 5,85MHz	
5530	4822 156 11158	Filter LC 6,55MHz	
5530	4822 157 71483	Filter LC 5,85MHz France	

5540	4822 157 53634	5,6uH 10%	
5541	4822 157 53634	5,6uH 10%	
5542	4822 157 53634	5,6uH 10%	
5550	4822 157 62552	2,2uH 20%	

6525	4822 130 83396	OF4271	
6530	4822 209 30911	OF4076	
6540▲	4822 130 30621	1N4148	

7525▲	5322 130 41962	BC848B	
7526	4822 130 60887	BF840	
7530▲	5322 130 41962	BC848B	
7540	4822 209 30909	TDA8732/C1	
7550	4822 209 32959	SAA7282AZP	
7560▲	4822 209 83163	LM833N	

Audio Feature Unit [Z]

Various

	4822 265 41451	9P male v 1.25
	4822 265 51385	25P male v 1.25
1051	4822 212 31842	AFU module
1765	4822 242 81969	Crystal 2,00MHz

2746	4822 124 41579	10uF 20% 50V	
2755	4822 124 40242	1uF 20% 63V	
2756	4822 122 33175	2,2nF 20% 50V	
2757	5322 122 32268	470pF 10% 50V	
2758	4822 126 13196	100nF 10% 25V	
2759	4822 124 41643	100uF 20% 16V	
2760▲	4822 124 40433	47uF 20% 25V	
2765	4822 122 33575	220pF 5% 50V	
2766	4822 122 33575	220pF 5% 50V	
2767	4822 126 12944	47nF 10% 50V	
2768	4822 126 12944	47nF 10% 50V	
2769	4822 126 13196	100nF 10% 25V	
2770	4822 124 41579	10uF 20% 50V	
2771	5322 122 32268	470pF 10% 50V	
2772	4822 122 33891	3,3nF 10% 63V	
2773	4822 124 41579	10uF 20% 50V	
2774	4822 122 32927	220nF 20% 50V	
2775▲	5322 122 34123	1nF 10% 50V	
2777	5322 122 32268	470pF 10% 50V	
2778	4822 122 33175	2,2nF 20% 50V	
2779	4822 124 41643	100uF 20% 16V	
2780	4822 121 70592	5,6nF 5% 400V	
2781▲	4822 124 40196	220uF 20% 16V	
2782	5322 121 41797	47nF 5% 100V	
2783	5322 121 42498	680nF 5% 63V	
2784	4822 121 42408	220nF 5% 63V	
2785	4822 121 42408	220nF 5% 63V	
2786	4822 121 42408	220nF 5% 63V	
2787▲	4822 124 40246	4,7uF 20% 63V	
2788▲	4822 124 40246	4,7uF 20% 63V	
2789	4822 121 42406	220nF 5% 63V	
2790	4822 126 13196	100nF 10% 25V	
2791	4822 121 51356	180nF 10% 63V	
2792	4822 124 41579	10uF 20% 50V	
2793	4822 124 42377	10uF 20% 16V	
2794	4822 124 42377	10uF 20% 16V	
2795	4822 126 13196	100nF 10% 25V	
2796	4822 126 13196	100nF 10% 25V	
2797	4822 126 13196	100nF 10% 25V	
2798	4822 121 41856	22nF 5% 250V	
2799	4822 121 41856	22nF 5% 250V	
2800	4822 121 41717	100nF 5% 100V	
2801	4822 121 41717	100nF 5% 100V	
2802	5322 126 10733	680pF 5% 50V	
2803	5322 121 41797	47nF 5% 100V	
2804	4822 121 41717	100nF 5% 100V	
2805	4822 121 41717	100nF 5% 100V	
2806	5322 126 10733	680pF 5% 50V	
2807	5322 121 41797	47nF 5% 100V	
2808	4822 124 81083	10uF 20% 16V	
2809	4822 124 42377	10uF 20% 16V	
2810	4822 124 42377	10uF 20% 16V	
2811	4822 124 42377	10uF 20% 16V	
2812	4822 121 42408	220nF 5% 63V	
2813	4822 122 32927	220nF 20% 50V	
2814	4822 122 32927	220nF 20% 50V	
2815	4822 124 41579	10uF 20% 50V	
2816	4822 121 70591	4,7nF 5% 400V	
2817	4822 124 81088	22uF 10% 16V	
2818	5322 122 31865	1,5nF 10% 63V	
2819	5322 122 31865	1,5nF 10% 63V	
2820	5322 122 31865	1,5nF 10% 63V	
2821	4822 122 33128	15nF 10% 63V	
2822	4822 122 33128	15nF 10% 63V	
2823▲	4822 122 33342	33nF 10% 63V	
2824	4822 122 32646	5,6nF 10% 50V	
2825	5322 122 32268	470pF 10% 50V	
2826	5322 122 32268	470pF 10% 50V	
2827	5322 122 31865	1,5nF 10% 63V	
2828	5322 122 31865	1,5nF 10% 63V	
2829▲	4822 122 33342	33nF 10% 63V	
2830	4822 122 32646	5,6nF 10% 50V	
2831	4822 124 40242	1uF 20% 63V	
2832	4822 124 41643	100uF 20% 16V	
2835	4822 121 51319	1uF 10% 63V	
2836	4822 121 51319	1uF 10% 63V	
2837	4822 122 33891	3,3nF 10% 63V	
2838	4822 122 33891	3,3nF 10% 63V	
2839▲	5322 122 34123	1nF 10% 50V	
2840▲	5322 122 34123	1nF 10% 50V	
2841▲	4822 122 33177	10nF 20% 50V	
2842▲	4822 122 33177	10nF 20% 50V	
2843▲	4822 122 33342	33nF 10% 63V	
2844▲	4822 122 33342	33nF 10% 63V	
2845	4822 126 13196	100nF 10% 25V	
2846	4822 126 13196	100nF 10% 25V	
2847	4822 124 40242	1uF 20% 63V	
2848	4822 122 33891	3,3nF 10% 63V	
2849	4822 122 33891	3,3nF 10% 63V	
2850▲	5322 122 34123	1nF 10% 50V	
2851▲	5322 122 34123	1nF 10% 50V	
2852▲	4822 122 33177	10nF 20% 50V	
2853▲	4822 122 33177	10nF 20% 50V	
2854▲	4822 122 33342	33nF 10% 63V	
2855▲	4822 122 33342	33nF 10% 63V	
2856	4822 126 13196	100nF 10% 25V	
2857	4822 126 13196	100nF 10% 25V	
2858	4822 124 41579	10uF 20% 50V	
2859	5322 122 32452	47pF 5% 63V	
2860	4822 126 13196	100nF 10% 25V	
2861	4822 124 41579	10uF 20% 50V	
2862	5322 122 32452	47pF 5% 63V	
2863▲	4822 122 33342	33nF 10% 63V	
2864	4822 122 32646	5,6nF 10% 50V	
2868▲	4822 122 33342	33nF 10% 63V	
2869	4822 122 32646	5,6nF 10% 50V	
2870	4822 124 40242	1uF 20% 63V	
2871	4822 124 41643	100uF 20% 16V	
2874	4822 122 33891	3,3nF 10% 63V	
2875	4822 122 33891	3,3nF 10% 63V	
2876▲	5322 122 34123	1nF 10% 50V	
2877▲	5322 122 34123	1nF 10% 50V	
2878▲	4822 122 33177	10nF 20% 50V	
2879▲	4822 122 33177	10nF 20% 50V	
2880▲	4822 122 33342	33nF 10% 63V	
2881▲	4822 122 33342	33nF 10% 63V	
2882	4822 126 13196	100nF 10% 25V	
2883	4822 126 13196	100nF 10% 25V	
2884	4822 124 40242	1uF 20% 63V	
2885	4822 122 33891	3,3nF 10% 63V	
2886	4822 122 33891	3,3nF 10% 63V	
2887	4822 121 51319	1uF 10% 63V	
2888▲	4822 122 33177	10nF 20% 50V	
2890▲	4822 122 33177	10nF 20% 50V	
2891▲	4822 122 33342	33nF 10% 63V	
2892▲	4822 122 33342	33nF 10% 63V	
2893	4822 126 13196	100nF 10% 25V	
2894	4822 126 13196	100nF 10% 25V	
2895	5322 122 31865	1,5nF 10% 63V	
2896	5322 122 31865	1,5nF 10% 63V	
2897	5322 122 31865	1,5nF 10% 63V	
2898	4822 122 33175	2,2nF 20% 50V	
2899	4822 122 33175	2,2nF 20% 50V	

3746	4822 051 20103	10k 5% 0,1W	
3747	4822 116 52175	100Ω 5% 0,5W	
3748	4822 116 52175	100Ω 5% 0,5W	
3754▲	4822 052 10278	2Ω7 5% 0,33W	
3755	4822 051 20223	22k 5% 0,1W	
3756	4822 051 20333	33k 5% 0,1W	
3757	4822 051 20822	8k2 5% 0,1W	
3758	4822 051 20209	20Ω 5% 0,1W	
3760	4822 116 52228	680Ω 5% 0,5W	
3761	4822 116 52228	680Ω 5% 0,5W	
3765	4822 051 20105	1M 5% 0,1W	
3768	4822 051 10102	1k 2% 0,25W	
3769	4822 051 20209	20Ω 5% 0,1W	
3770	4822 051 20153	15k 5% 0,1W	
3771	4822 051 20183	18k 5% 0,1W	
3772	4822 051 20153	15k 5% 0,1W	
3773	4822 051 20682	6k8 5% 0,1W	
3774	4822 051 10102	1k 2% 0,25W	
3775	4822 051 20391	390Ω 5% 0,1W	
3776	4822 051 20153	15k 5% 0,1W	
3777	4822 051 20153	15k 5% 0,1W	
3778	4822 051 20153	15k 5% 0,1W	
3780	4822 117 10837	100k 1% 0,1W	
3783	4822 051 20334	330k 5% 0,1W	
3791	4822 051 20473	47k 5% 0,1W	
3792	4822 051 20473	47k 5% 0,1W	
3793	4822 051 20223	22k 5% 0,1W	
3794	4822 051 20223	22k 5% 0,1W	
3800	4822 051 20752	7k5 5% 0,1W	
3801	4822 051 20153	15k 5% 0,1W	
3802	4822 051 20473	47k 5% 0,1W	
3804	4822 116 52299	7k5 5% 0,5W	
3805	4822 051 20153	15k 5% 0,1W	
3806	4822 051 20473	47k 5% 0,1W	
3808	4822 053 20106	10M 5% 0,25W	
3816	4822 051 20104	100k 5% 0,1W	
3825	4822 050 11002	1k 1% 0,4W	
3826	4822 050 11002	1k 1% 0,4W	
3827	4822 116 52175	100Ω 5% 0,5W	
3828	4822 116 52175	100Ω 5% 0,5W	
3830	4822 116 52228	680Ω 5% 0,5W	
3831	4822 116 52228	680Ω 5% 0,5W	
3835	4822 051 20101	100Ω 5% 0,1W	
3836	4822 051 20101	100Ω 5% 0,1W	
3837	4822 051 20682	6k8 5% 0,1W	
3839	4822 051 20682	6k8 5% 0,1W	
3841	4822 051 20682	6k8 5% 0,1W	
3843	4822 051 20682	6k8 5% 0,1W	
3845	4822 051 20682	6k8 5% 0,1W	
3848	4822 051 20682	6k8 5% 0,1W	
3850	4822 051 20682	6k8 5% 0,1W	
3852	4822 051 20682	6k8 5% 0,1W	
3854	4822 051 20682	6k8 5% 0,1W	
3856	4822 051 20682	6k8 5% 0,1W	
3858▲	4822 051 20472	4k7 5% 0,1W	
3859	4822 051 20103	10k 5% 0,1W	
3860▲	4822 052 10828	8Ω2 5% 0,33W	
3861▲	4822 051 20472	4k7 5% 0,1W	
3862	4822 051 20103	10k 5% 0,1W	
3865	4822 116 52175	100Ω 5% 0,5W	
3866	4822 116 52175	100Ω 5% 0,5W	
3867	4822 116 52175	100Ω 5% 0,5W	
3868	4822 051 20681	680Ω 5% 0,1W	
3869	4822 051 20681	680Ω 5% 0,1W	
3870	4822 051 20681	680Ω 5% 0,1W	
3871	4822 051 20681	680Ω 5% 0,1W	
3872	4822 116 52175	100Ω 5% 0,5W	
3873	4822 116 52175	100Ω 5% 0,5W	
3874	4822 051 20682	6k8 5% 0,1W	
3876	4822 051 20682	6k8 5% 0,1W	
3878	4822 051 20682	6k8 5% 0,1W	
3880	4822 051 20682	6k8 5% 0,1W	
3882	4822 051 20682	6k8 5% 0,1W	
3885	4822 051 20682	6k8 5% 0,1W	
3889	4822 051 20682	6k8 5% 0,1W	
3891	4822 051 20682	6k8 5% 0,1W	
3893	4822 051 20682	6k8 5% 0,1W	
3898	4822 051 20561	560Ω 5% 0,1W	
3899	4822 051 20561	560Ω 5% 0,1W	
3999	4822 051 20279	27Ω 5% 0,1W	
4xxx	4822 051 20008	0Ω 5% 0,1W	

5759	4822 158 10604	6,8 uH 10%	

6750	4822 130 42488	BYD33D	

7746	5322 209 10683	PCF8574P	
7760	4822 209 90023	NJU9701D	
7773▲	5322 130 41962	BC848B	
7775	5322 130 41963	BC858B	
7791▲	5322 130 41962	BC848B	
7792▲	5322 130 41962	BC848B	
7800	4822 209 32693	NJM2177	
7820	4822 209 33293	TDA9860/V2	
7840	4822 209 90028	TEA6360/V2	
7860	4822 209 33293	TDA9860/V2	
7862▲	4822 209 83163	LM833N	
7867	5322 130 41963	BC858B	
7880	4822 209 90028	TEA6360/V2	

Incredible-sound module [AY]

Various

	4822 265 41469	Strip 7P
1550	4822 212 31864	Incredible sound module

2500	4822 126 13189	1uF 20%16V	
2501	4822 122 33175	2,2nF 20% 50V	
2502	5322 122 32268	470pF 10% 50V	
2503▲	5322 122 34123	1nF 10% 50V	
2504	4822 122 33175	2,2nF 20% 50V	
2505	4822 126 10002	100nF 20% 25V	
2506	4822 126 13189	1uF 20%16V	
2507	4822 122 33175	2,2nF 20% 50V	
2508	5322 122 32268	470pF 10% 50V	
2509▲	5322 122 34123	1nF 10% 50V	
2510	4822 122 33175	2,2nF 20% 50V	
2511	4822 126 10002	100nF 20% 25V	
2512	4822 126 10002	100nF 20% 25V	
2513	4822 124 41643	100uF 20% 16V	
2524	4822 126 13189	1uF 20%16V	
2525	4822 126 13189	1uF 20%16V	

3500	4822 051 10682	6k8 2% 0,25W	
3501▲	4822 051 10103	10k 2% 0,25W	
3502	4822 051 20103	10k 5% 0,1W	
3503	4822 051 20222	2k2 5% 0,1W	
3504	4822 051 20122	1k2 5% 0,1W	
3505	4822 051 20122	1k2 5% 0,1W	
3506	4822 051 20103	10k 5% 0,1W	
3507	4822 051 10102	1k 2% 0,25W	
3508	4822 051 20103	10k 5% 0,1W	
3509	4822 051 20101	100Ω 5% 0,1W	
3510	4822 051 20103	10k 5% 0,1W	
3511	4822 051 20391	390Ω 5% 0,1W	
3512	4822 051 10682	6k8 2% 0,25W	
3513▲	4822 051 10103	10k 2% 0,25W	
3514	4822 051 20103	10k 5% 0,1W	
3515	4822 051 20222	2k2 5% 0,1W	
3516	4822 051 20122	1k2 5% 0,1W	
3517	4822 051 20122	1k2 5% 0,1W	
3518	4822 051 20103	10k 5% 0,1W	
3519	4822 051 10102	1k 2% 0,25W	
3520	4822 051 20103	10k 5% 0,1W	
3521	4822 051 20101	100Ω 5% 0,1W	
3522	4822 051 20103	10k 5% 0,1W	
3523	4822 051 20391	390Ω 5% 0,1W	
3525	4822 051 20103	10k 5% 0,1W	
3526	4822 051 20103	10k 5% 0,1W	
3527	4822 116 83864	10k 5% 0,5W	
3599	4822 051 20279	27Ω 5% 0,1W	

7600	4822 209 30095	LM833D	
7601	4822 209 30095	LM833D	
7602	5322 209 14481	HEF4053BT	

Subwoofer-filter [AK]

Various

	4822 265 31242	2P male v 2,5
	4822 267 31874	2P male v 2,5 black
1353	4822 212 31836	Subwoofer-filter GFL4

2570	4822 124 41069	47uF 20% 63V	
2571	4822 124 81086	100uF 20% 50V	
2573	4822 124 41069	47uF 20% 63V	

3571	4822 113 80677	22Ω 10% 5W	

5570	4822 157 62199	Choke TS422	

Combfilter panel [O]

Various

	4822 267 51432	12P female BTB
1335	4822 212 31855	Combfilter panel

2000	4822 126 13196	100nF 10% 25V	
2001	5322 122 31866	6,8nF 10% 63V	
2006	4822 126 13196	100nF 10% 25V	
2010	4822 126 13196	100nF 10% 25V	
2011	5322 122 32452	47pF 5% 63V	
2012▲	4822 122 33177	10nF 20% 50V	
2013▲	4822 124 40433	47uF 20% 25V	
2014	4822 122 32535	680pF 10% 63V	
2015	4822 126 13196	100nF 10% 25V	
2016	5322 122 31946	27pF 5% 63V	
2017▲	5322 122 32654	22nF 10% 63V	
2018▲	5322 122 32654	22nF 10% 63V	
2019	4822 122 33216	270pF 5% 50V	
2021	4822 124 41579	10uF 20% 50V	
2023	4822 126 13196	100nF 10% 25V	
2028	5322 122 32448	10pF 5% 50V	
2030▲	5322 122 32654	22nF 10% 63V	
2031	4822 126 13196	100nF 10% 25V	
2032▲	4822 124 40433	47uF 20% 25V	
2033	4822 126 13196	100nF 10% 25V	
2034▲	4822 124 40433	47uF 20% 25V	
2035	4822 126 13196	100nF 10% 25V	
2036	5322 122 32531	100pF 5% 50V	
2044	4822 126 13196	100nF 10% 25V	
2050	4822 124 41579	10uF 20% 50V	
2059	5322 122 32336	560pF 10% 100V	
2060	4822 126 13196	100nF 10% 25V	
2061	5322 122 32452	47pF 5% 63V	
2062	5322 122 32452	47pF 5% 63V	
2063	5322 122 32452	47pF 5% 63V	
2064	5322 122 32452	47pF 5% 63V	
2074	4822 124 41579	10uF 20% 50V	
2075▲	5322 122 32654	22nF 10% 63V	
2076▲	4822 124 40433	47uF 20% 25V	
2077	4822 124 40756	1uF 20% 100V	
2078	4822 126 13196	100nF 10% 25V	
2079	4822 124 41579	10uF 20% 50V	
2081	5322 122 32965	18pF 5% 50V	
2082	4822 126 13196	100nF 10% 25V	
2083	5322 122 32965	18pF 5% 50V	
2090▲	4822 124 41525	100uF 20% 25V	
2095	4822 126 13196	100nF 10% 25V	

3000	4822 051 20103	10k 5% 0,1W	
3001	4822 051 20151	150Ω 5% 0,1W	
3002	4822 051 20471	470Ω 5% 0,1W	
3011	4822 051 10102	1k 2% 0,25W	
3012	4822 051 10102	1k 2% 0,25W	
3013	4822 051 20103	10k 5% 0,1W	
3018	4822 051 10102	1k 2% 0,25W	
3019	4822 051 10102	1k 2% 0,25W	
3020	4822 051 20471	470Ω 5% 0,1W	
3021	4822 051 10102	1k 2% 0,25W	
3022	4822 051 20103	10k 5% 0,1W	
3024	4822 051 20103	10k 5% 0,1W	
3026	4822 051 20103	10k 5% 0,1W	
3027	4822 051 20101	100Ω 5% 0,1W	
3028	4822 051 20471	470Ω 5% 0,1W	
3029	4822 051 20181	180k 5% 0,1W	
3030▲	4822 051 20332	3k3 5% 0,1W	
3031	4822 051 20183	18k 5% 0,1W	
3032	4822 051 10102	1k 2% 0,25W	
3033	4822 051 10102	1k 2% 0,25W	
3034	4822 051 10102	1k 2% 0,25W	
3035▲	4822 052 10108	1Ω 5% 0,33W	
3036	4822 051 20101	100Ω 5% 0,1W	
3040	4822 051 20183	18k 5% 0,1W	
3041	4822 051 20183	18k 5% 0,1W	
3042	4822 051 20122	1k2 5% 0,1W	
3043	4822 051 20331	330Ω 5% 0,1W	
3044	4822 051 20751	750Ω 5% 0,1W	
3047	4822 051 10102	1k 2% 0,25W	
3050	4822 051 20183	18k 5% 0,1W	
3051	4822 051 20183	18k 5% 0,1W	
3052	4822 051 20122	1k2 5% 0,1W	
3053	4822 051 20331	330Ω 5% 0,1W	
3054	4822 051 20751	750Ω 5% 0,1W	
3057	4822 051 10102	1k 2% 0,25W	
3065	4822 051 20103	10k 5% 0,1W	
3071	4822 051 20124	120k 5% 0,1W	
3078	4822 051 20471	470Ω 5% 0,1W	
3079	4822 051 20101	100Ω 5% 0,1W	
3080	4822 051 10102	1k 2% 0,25W	
3081	4822 051 10102	1k 2% 0,25W	
3082	4822 051 10102	1k 2% 0,25W	
3084	4822 051 20471	470Ω 5% 0,1W	
3085	4822 051 20221	220Ω 5% 0,1W	
3086	4822 051 20331	330Ω 5% 0,1W	
3087	4822 051 10102	1k 2% 0,25W	
3088	4822 051 20101	100Ω 5% 0,1W	
3089	4822 051 20101	100Ω 5% 0,1W	
3090	4822 051 20479	47Ω 5% 0,1W	
3091▲	4822 052 10108	1Ω 5% 0,33W	
3092	4822 051 20101	100Ω 5% 0,1W	
3099▲	4822 051 20472	4k7 5% 0,1W	
3999	4822 051 20279	27Ω 5% 0,1W	

5025	4822 157 51216	5,6uH 10%	
5030	4822 157 51216	5,6uH 10%	
5031	4822 157 51216	5,6uH 10%	
5032	4822 157 51216	5,6uH 10%	
5080	4822 154 10057	Filter LC 7,2MHz low-pass	

7000	4822 209 52583	MC141625AFU1	
7001	4822 209 30144	74HC4046AD	
7003	4822 130 63732	MMUN2212	
7008▲	5322 130 41982	BC848B	
7009▲	5322 130 41982	BC848B	
7010▲	5322 130 41982	BC848B	
7011▲	5322 130 41982	BC848B	
7013	4822 130 63732	MMUN2212	
7020	5322 209 71589	74HC74D	
7021	4822 130 63732	MMUN2212	
7028	5322 130 42136	BC848C	
7030	4822 130 63732	MMUN2212	
7031▲	5322 130 41962	BC848B	
7032	5322 130 41983	BC858B	
7033	4822 130 63732	MMUN2212	
7040▲	5322 130 41982	BC848B	
7041	5322 130 41983	BC858B	
7042▲	5322 130 41982	BC848B	
7050▲	5322 130 41982	BC848B	
7051	5322 130 41983	BC858B	
7052▲	5322 130 41982	BC848B	
7080▲	5322 130 41982	BC848B	
7081▲	5322 130 41982	BC848B	
7083▲	5322 130 41982	BC848B	

VCI panel [W]

Various

	4822 265 41451	9 male v 1.25
	4822 267 51434	12P female BTB
1040	4822 212 31854	VCI panel scavem
1040	4822 212 31856	VCI panel non scavem

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With the professional Dealer Service Tool

The Philips RC 7150 professional Dealer Service Tool (DST) saves you valuable time with its service and installation functions.

The compact, low-cost DST downloads stored TV and VCR preset tables in as little as a minute, making installation easy.

For service technicians, the DST enables remote fault diagnosis and activation of the Dealer menu on the latest Philips high-end TV sets. It also allows functions like Service Default mode and Service Alignment mode to be activated remotely.

BENEFITS

INSTALLATION

Save up to 30 minutes per set (30 presets)

	NORMAL	Using RC 7150
TV Chassis		

For more information about the professional Dealer Service Tool RC 7150 and how it will save you time in service and installation, contact your local Philips Consumer Service organisation.

Order code 4822 218 21232

PHILIPS

POS 41667

Teletext panel [AQ]

Various

	5322 255 40677	68P.PLCC-S-HC
	4822 265 51384	15P male v 1.25
1031	4822 212 31852	"X" panel

2430	4822 126 10002	100nF 20% 25V
2433	5322 122 32658	22pF 5% 50V
2434	4822 122 31772	47pF 2% 63V
2435	5322 122 32658	22pF 5% 50V
2436	5322 122 32658	22pF 5% 50V
2437	5322 122 32658	22pF 5% 50V
2438	5322 122 32452	47pF 5% 63V
2440	5322 122 32531	100pF 5% 50V
2441	5322 122 32658	22pF 5% 50V
2442	5322 122 32658	22pF 5% 50V
2443	4822 126 10002	100nF 20% 25V
2444	4822 126 10002	100nF 20% 25V
2445	4822 122 32482	22pF 2% 63V
2448▲	5322 122 34123	1nF 10% 50V
2447	5322 122 31866	6.8nF 10% 63V
2448	4822 126 10002	100nF 20% 25V
2449	4822 126 10002	100nF 20% 25V
2451	4822 126 10002	100nF 20% 25V
2452	4822 126 10002	100nF 20% 25V
2453	4822 126 10002	100nF 20% 25V
2454	4822 124 41643	100uF 20% 16V
2455	4822 124 41643	100uF 20% 16V
2459	4822 124 41643	100uF 20% 16V
2461	4822 126 10002	100nF 20% 25V
2462	4822 126 10002	100nF 20% 25V
2463▲	5322 122 34123	1nF 10% 50V
2464	4822 126 10002	100nF 20% 25V
2465	5322 122 32658	22pF 5% 50V
2466	4822 122 33575	220pF 5% 50V
2467	4822 126 10326	180pF 5% 63V
2468	4822 126 10002	100nF 20% 25V
2469	4822 126 10002	100nF 20% 25V
2470	4822 122 33575	220pF 5% 50V
2472	4822 126 10002	100nF 20% 25V

3148▲	4822 052 10279	27Ω 5% 0.33W
3149	4822 051 20474	470k 5% 0.1W
3151▲	4822 051 20472	4k7 5% 0.1W
3152	4822 051 20471	470Ω 5% 0.1W
3153	4822 051 20103	10k 5% 0.1W
3154	4822 051 20103	10k 5% 0.1W
3155▲	4822 051 20472	4k7 5% 0.1W
3156	4822 051 20223	22k 5% 0.1W
3451	4822 051 20273	27k 5% 0.1W
3454	4822 051 20221	220Ω 5% 0.1W
3455	4822 051 20151	150Ω 5% 0.1W
3457	4822 051 20151	150Ω 5% 0.1W
3461	4822 051 10102	1k 2% 0.25W
3462	4822 051 20272	2k7 5% 0.1W
3463	4822 051 20101	100Ω 5% 0.1W
3464	4822 051 20221	220Ω 5% 0.1W
3465	4822 051 20339	33Ω 5% 0.1W
3481	4822 051 20101	100Ω 5% 0.1W
3482	4822 051 20101	100Ω 5% 0.1W
3483▲	4822 051 20472	4k7 5% 0.1W
3484	4822 051 20101	100Ω 5% 0.1W
3488	4822 051 20101	100Ω 5% 0.1W
3489	4822 051 20101	100Ω 5% 0.1W
3490	4822 051 20101	100Ω 5% 0.1W
3491	4822 051 20101	100Ω 5% 0.1W
3493	4822 051 20101	100Ω 5% 0.1W
3496	4822 051 20101	100Ω 5% 0.1W
3497	4822 051 20151	150Ω 5% 0.1W
3996	4822 051 20279	27Ω 5% 0.1W

5451	4822 157 53634	8.6uH 10%
5452	4822 157 53634	8.6uH 10%
5454	4822 157 53634	8.6uH 10%
5455	4822 157 51216	8.6uH 10%
5460	4822 157 71464	0.1uH trimm

6001	5322 130 61111	BF998
6002▲	4822 130 30621	BC848B

7049	4822 209 72042	MC78L05ACP
7050	4822 209 33465	74HCT4046AD
7055	4822 130 42131	BF550
7056▲	5322 130 41982	BC848B
7057▲	5322 130 41982	BC848B
7051	4822 209 90037	SAA5270WP A
7490	4822 209 90027	HYB514400BJ-70

Error number	Description of error Beschreibung der Fehler	Error number	Description of error Beschreibung der Fehler
0	No error	15	I²C, IC7352, SSP [S5] (TDA9141/9161) Video Demod.
1	I²C, IC7212, SSP [S8] (ST24C02AB1) (not used)	16	I²C, IC7500, SSP [S6] (TDA4780) Video Controller
2	I²C, IC7212, SSP [S8] (ST24C04B1) (not used)	17	Not used
3	I²C, IC7212, SSP [S8] (ST24C08B1) (not used)	18	I²C, IC7315, DDP (Geometry) [J] (TDA9155)
4	I²C, IC7212, SSP [S8] (ST24C16B1)	19	I²C, IC7600, SSP [S2] (TDA9840)
5	I²C, IC7204, SSP [S8] (HEF4094)	20	I²C, IC7550, NICAM [G] (SAA7282)
6	I²C, front-end, SSP [S1] (FQ9xx)	21	I²C, IC7650, SSP [S3] (TDA9860)
7	HEF STROBE, front-end, SSP [S1] (FQ9xx) (not used)	22	I²C, IC7820, AFU [Z] (TDA9860)
8	I²C, IC7823, I/O [I] (TEA6425)	23	I²C, IC7840, AFU [Z] (TEA6360)
9	I²C, IC7824, I/O [I] (TEA6425)	24	Not used
10	I²C, IC7821, I/O [I] (TEA6430)	26	I²C, IC7746, AFU [Z] (PCF8574)
11	I²C, IC7822, I/O [I] (TEA6430)	27	I²C, IC7601, I/O [U] (PCF8574)
12	I²C, IC7818, I/O [I] (MSM6307)	28	I²C, IC7051, TXT [S or AQ] (SAA5270)
13	I²C, IC7814, I/O [I] (TMP47C103N)	29	I²C, IC7505, FBX [F] (PCF83C652)
14	I²C, IC7880, I/O [I] (TEA6422)	30	PCF8574 (16:9 compressor)

Error number	Description of error Beschreibung der Fehler	Error number	Description of error Beschreibung der Fehler
31	TDA8443A (16:9 compressor)	48	Protection (prot-line)
32	I²C, IC7788, PIP [P] (SDA9288)	49	I²C, IC7823, I/O [I] (TEA6417)
33	I²C, IC7788, PIP [P] (SDA9288)	50	I²C, IC7788, PIP [P] (SDA9288)
34	I²C, PIP tuner [P]	60	BSCS microprocessor (satellite)
35	Not used	61	PCF8574 (3D combfilter)
36	I²C, IC7860 PIP [P] (PCF8574)	62	PCF8574 (NTSC to Muse)
40	I²C, PCF83CE652 (cardreader)	65	PCF8574 (HDI)
41	I²C, PCF83CE654 (satellite)	66	TDA4672 (PSI)
42	I²C, IC7900, I/O [I] (PCF8574P)	67	TDA8444 (Video Improvement Panel)
43	I²C, IC, [G] (PCF8574)	68	I²C, AI without FBX, (TDA9170)
44	Supply protection error (front-end, IC7051 teletext, IC7505 featurebox, PIP tuner and IC7821 I/O)	69	Hfail, horizontal deflection error (DDP protection)
		70	Vfail, vertical deflection error (DDP protection)
45	Not used	71	Overcurrent (DDP protection)
46	Not used	72	Overvoltage (DDP protection) (not used)
47	+140V series switch protection		

DIVERSITYLIST DEFLECTION / BESTÜCKUNGSUNTERSCHIEDE GFL-V2 2FH

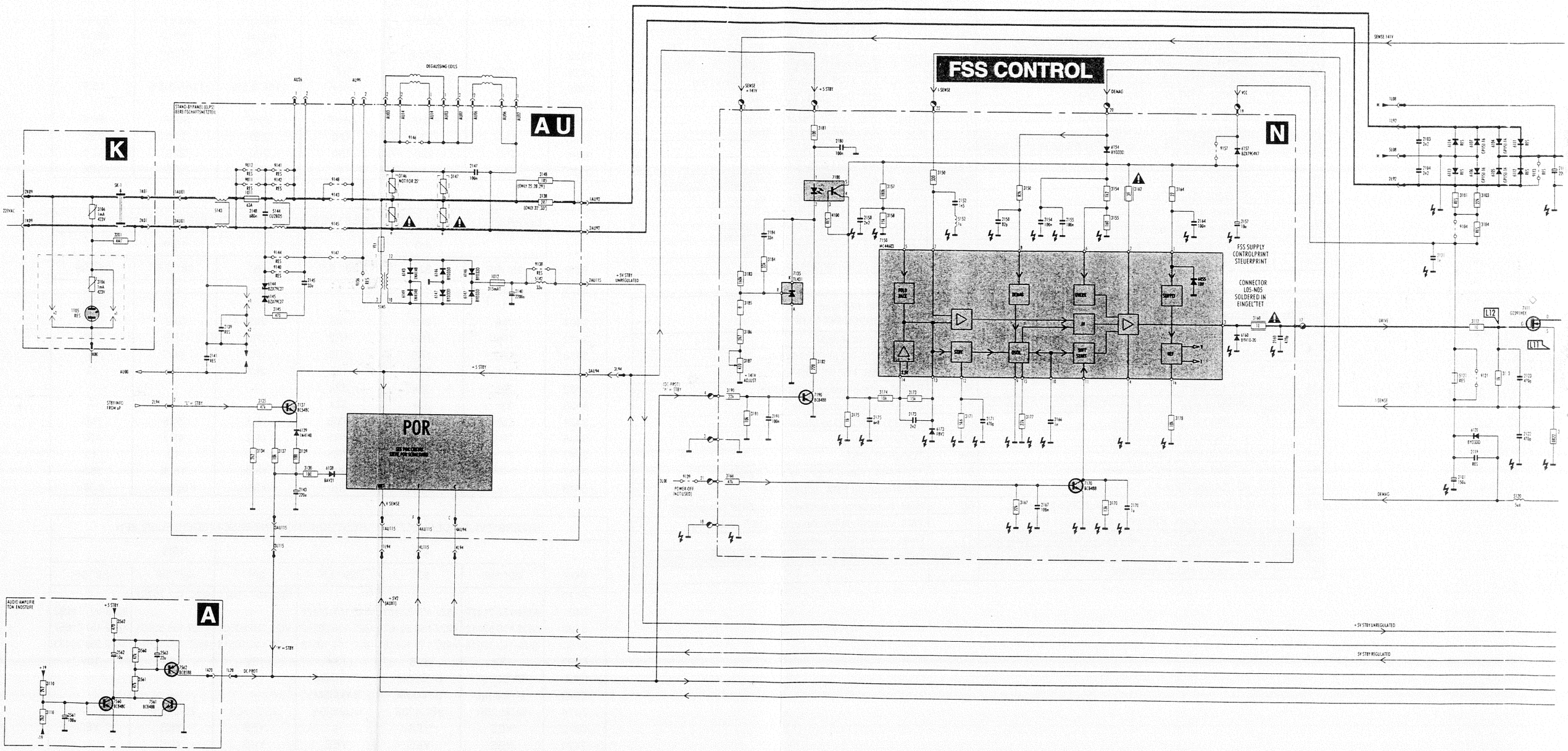
*	4:3			16:9		
POS	25" SF	33"	29" SF	28"	28" SF	32" SF
2409	390p	1n8	1n8	1n5	1n5	1nF
2412	24nF	27nF	24nF	27nF	27nF	36nF
2419	-	10nF	-	-	-	-
2421	560nF	560nF	560nF	680nF	680nF	680nF
2422	-	-	-	680nF	680nF	680nF
2423	-	560nF	560nF	510nF	510nF	560nF
2424	1µF	1µF	1µF	-	-	-
2429	11nF	-	11nF	11nF 3.5%	11nF 3.5%	13nF
2433	470nF	-	-	-	-	-
2450	33nF	56nF	56nF	39nF	39nF	56nF
3263	120	220	120	220	220	220
3264	150	220	150	220	220	220
3270	1	1	1	1R5	1R5	1R5

DIVERSITYLIST DEFLECTION / BESTÜCKUNGSUNTERSCHIEDE GFL-V2 2FH

*	4:3			16:9		
POS	25" SF	33"	29" SF	28"	28" SF	32" SF
3271	1	1	1	1R5	1R5	1R5
3272	1	1	1	1R8	1R8	1R8
3404	1k8	2k2	1k8	2k2	2k2	1k5
3412	1R2	1R5	1R2	1R5	1R5	1R2
3413	1R2	1R5	1R5	1R5	1R5	1R2
3419	1k5	2k7	1k5	2k7	1k	1k
3422	33k	33k	33k	-	-	-
3423	33k	33k	33k	-	-	-
3431	5M6	5M6	5M6	7M5	7M5	7M5
3446	7R5	7R5	7R5	4R7	4R7	4R7
3447	7R5	7R5	7R5	10	10	10
3457	240k	220k	240k	180k	180k	180k
5413	1µ	0.56µ	1µ	0.56µ	0.56µ	0.56µ

DIVERSITYLIST DEFLECTION / BESTÜCKUNGSUNTERSCHIEDE GFL-V2 2FH

*	4:3				16:9	
POS	25" SF	33"	29" SF	28"	28" SF	32" SF
5420	-	-	-	4822 157 70871	4822 157 70781	-
5421	4822 157 71472	4822 157 71473	4822 157 71472	-	-	8228 001 14292
5428	4822 156 50112	4822 156 50107	4822 156 50112	4822 156 50501	4822 156 50101	4822 157 71657
5450	4822 140 10518	4822 140 10516	4822 140 10518	4822 140 10518	4822 140 10518	3122 268 30483
6263	13V	5V6	13V	13V	13V	10V
6422	BYD33M	BYD33M	BYD33M	-	-	-
6423	BYD33M	BYD33M	BYD33M	-	-	-
7414	BU2525A	2SC4288	BU2525A	2SC4288	2SC4288	2SC4288
9270	YES	YES	-	YES	YES	YES
9424	YES	YES	YES	YES	YES	-
9426	-	YES	-	YES	YES	YES
9428	YES	-	YES	-	-	-
9432	-	-	-	YES	YES	YES


K
AU
N
A
FSS CONTROL
POR
FSS SUPPLY CONTROLPRINT STEUERPRINT
CONNECTOR LOS-NO5 SOLDERED IN EINGELÖTET
DEGAUSSING COILS
STAND-BY PANEL (ELPS) BEREITSCHAFTSNETZTEIL
AUDIO AMPLIFIER TDA EINDSTUFE
220VAC
SENSE +141V
+5 STBY
H-SENSE
DEMAG
VCC
DRIVE
V-SENSE
+141V ADJUST
DC PROT
POWER OFF (NOT USED)
STBY INFO FROM uP
"1" = STBY
"0" = STBY
+5V STBY UNREGULATED
5V STBY REGULATED
+5V (AUDIO)
SENSE 141V
H-SENSE
DEMAG

PCS 81 247

FSS SUPPLY

AUX 1 SUPPLY

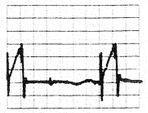
L11

200mV/div
5µs/div

L12

2V/div
5µs/div

L14



200mV/div
2µs/div

L15

2V/div
2µs/div

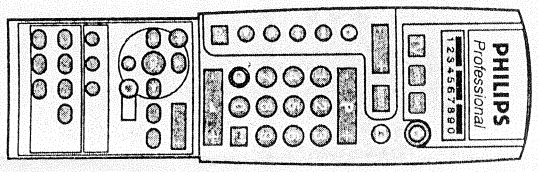
WARNING: DO NOT MEASURE VOLTAGES ACROSS D-S OF TS7111 AND TS7228

POS	NON-SAT	SAT
1135	RES	2.5AT
2126	RES	470pF
2136	RES	680uF
2242	RES	1n5
2243	RES	270uF
3122	RES	5k6
5135	RES	BEAD
5240	RES	33uH
6125	RES	BYD33D
6242	RES	BYD33G
9133	RES	YES
9242	RES	YES

DDP PANEL

PROTECTIONS

DST RC7150



POR

POR CIRCUIT(STAND-BY PANEL, ELPS)

HORIZONTAL

PROTECTIONS

47
Serie switch
Serien schalter

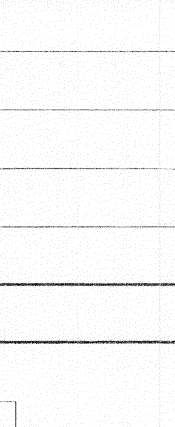
48

5

4

44

DST
RC7150



HORIZONTAL

PANORAMA DAF

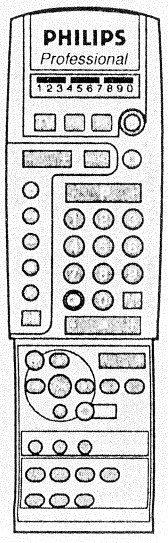
NS COR

OST/WEST
EAST/WEST

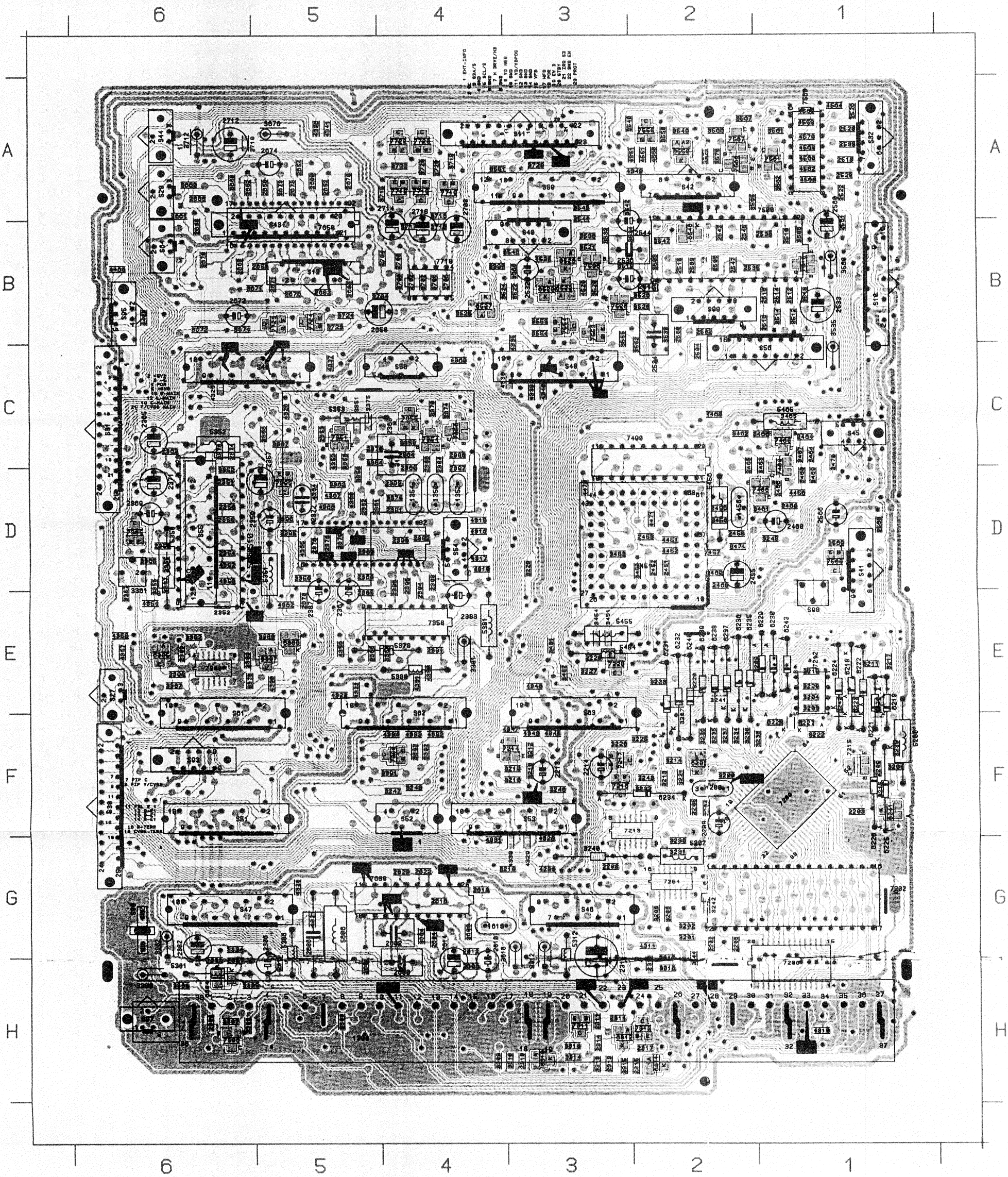
Leuchtfleck
Unterdrueckung
Switch off picture blanking

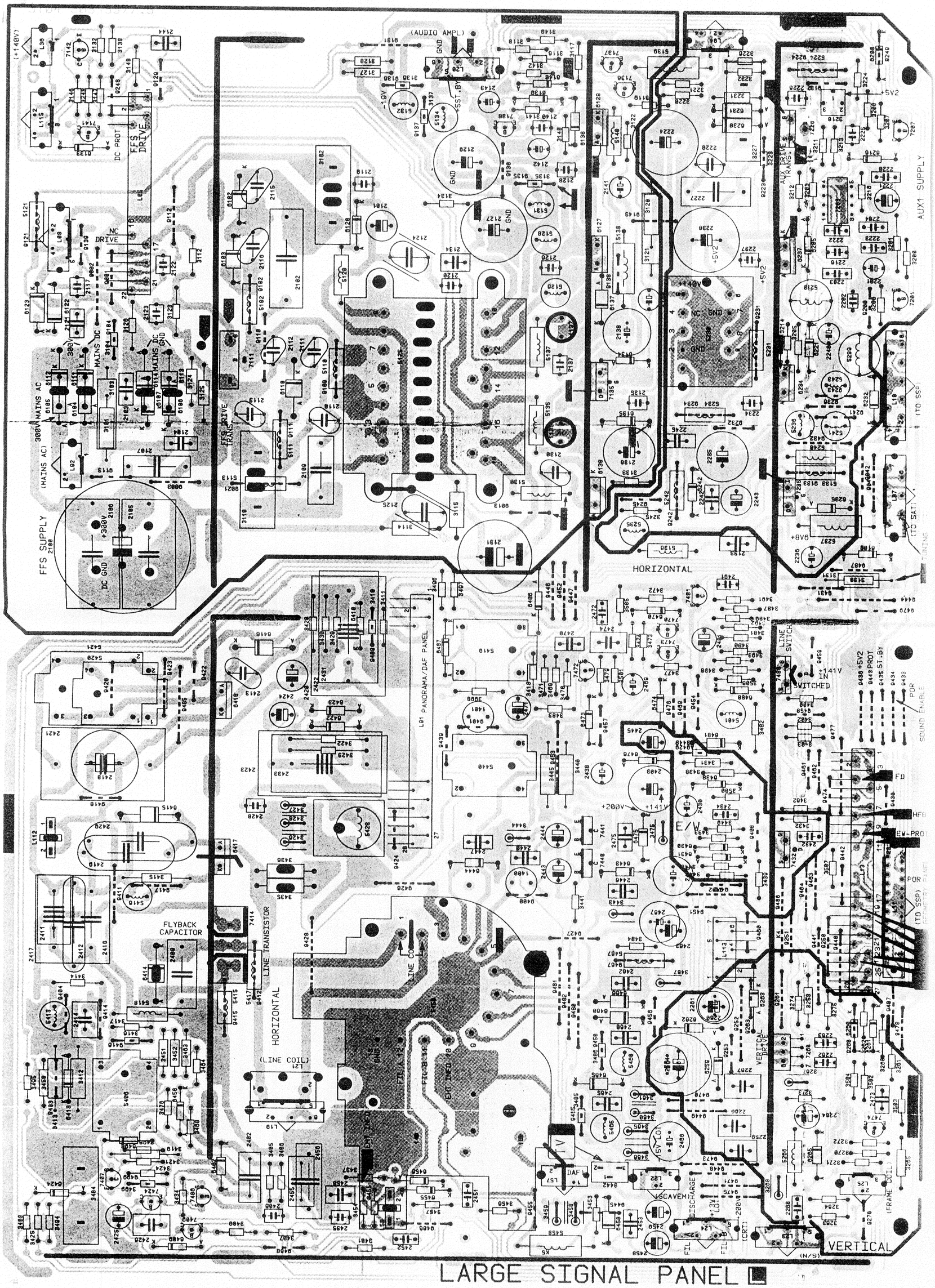
VERTICAL

DST
RC7150



Small signal panel / Klein-Signal Platte




A
B
C
D
E
F
G
H
FFS SUPPLY
FFS DRIVE
NC DRIVE
DC PROT
300V MAINS AC
(MAINS AC)
MAINS DC
MAINS DC GND
DC GND
+300V
FFS DRIVE TRANS.
(AUDIO AMPL)
GND
+8ST.BY
-10V
+140V
NC GND
+5V2
AUX DRIVE TRANS.
AUX1 SUPPLY
(TO SSP)
(TO SAT. TUNING)
+8V8
HORIZONTAL
LOT PANORAMA/DAF PANEL
+141V SWITCHED
LINE SWITCH
+141V IN
+200V
+141V
E/W
FD
HFB
EW-PRO
POR
SOUND ENABLE
(TO SSP)
GEOMETRY PANEL
FLYBACK CAPACITOR
LINE TRANSISTOR
HORIZONTAL
(LINE COIL)
LINE COIL
FIL.A 12.3
FIL.B 14.0
EHT INFO
EHT PROT
VERTICAL DRIVE
DAF
(SCAVEM)
DISCHARGE
LOT
FIL.A (CRT)
FIL.B (CRT)
(S/N)
VERTICAL
(FRAME COIL)
LARGE SIGNAL PANEL